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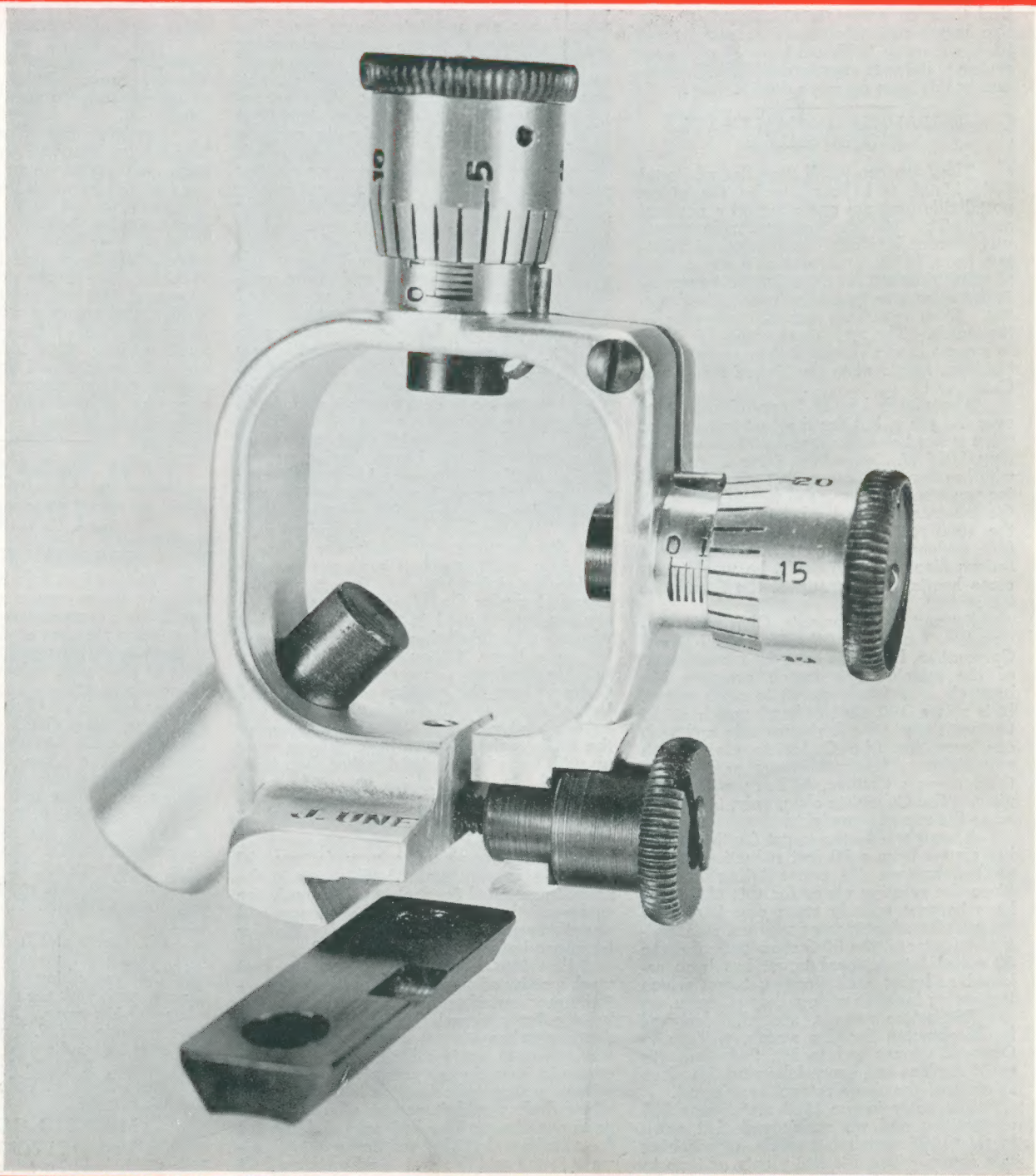
Precision SHOOTING



a magazine for Shooters by Shooters

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COVER PHOTO

Enlarged photo of the John Unertl Optical Company's new "POSA-MOUNT" system target rifle telescope rear mount and base, cut away to show detail of clamping system. Refer to report of UNERTL products in this issue for more details.

THE AMERICAN SMALLBORE RECORD MATCH

The American Small Bore Record Postal Rifle Match is believed to be the oldest postal rifle program operating on a national scale. This 100 shot offhand rifle match was founded by Chris Westergaard of Whiting, Iowa, in 1918, to serve as a widespread shooting program for those people interested in the Scheutzen type of offhand rifle shooting. Chris is still an annual competitor in the match. The match was originally "open to anyone in the World" but in recent years has been restricted to the United States and Canada.

The match has had several managers over the years, but for the past twenty odd years it has been managed by Spencer Lanning, 2015 W. Horne Ave., Sioux City, Iowa, who has done an outstanding job. Advancing years and not too good health has made the job increasingly hard for him and after the 1963 match he definitely gave it up. (We understand Spence is now battling a serious illness and no doubt he would welcome hearing from many of the friends he has made.)

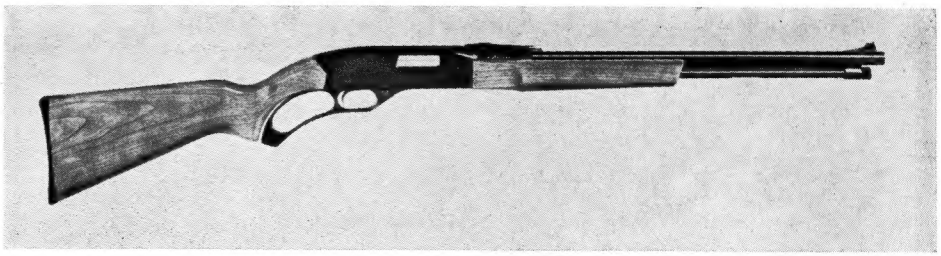
By mutual agreements, Charles E. Lyman 3rd, President of the Blue Trail Range Corporation, has taken over the management of the match. The match program has been changed (modernized) to some extent. It is still a 100 shot offhand match at 50 feet with any .22 cal. rimfire rifle and with one exception (the Collegiate class), with any sights. The competitors will be in three classes; Civilian, Military and Collegiate. The Collegiate class, **only,** is restricted to the use of iron sights.

Through 1963 the target for this match has always been a 50 feet reduction of 200 yard Scheutzen 25 count "Ring" target. Since the printing plates for this old target have become entirely worn out, it seemed desirable to adopt a more modern, standardized target, and the 50 feet reduction of the 50 meter International target has been selected as being a challenging target which is growing in favor with gallery riflemen.

Distinctive awards, specially designed by Blackington for this match, will go to Over-All winner and to 1st, 2nd, 3rd, 4th and 5th place and every following 5th place in each of the three categories (classes).

The entry in the 1963 match was 238 competitors and we understand that entry in this 1964 match is rapidly approaching that figure. There is still plenty of time to enter and fire this 1964 match since the closing date for fired targets to reach The Blue Trail Range, Box 88, Middlefield, Conn. is April 30, 1964.

P. H. T.



The new Model 70 Winchester with many improved features.

THE SHOP
By Roy Dunlap

Didn't have much to talk about until the new Winchester Model 70 rifle made its debut. That was their first mistake, calling it the 70. The swivels, and I think two of the guard screws, are same as used with the now 'old' M70. Such parts as bolts, barrels, firing pins, bolt sleeves, extractor, ejector. etc. aren't even similar. Even magazine boxes are not interchangeable. The rifle is a triumph for the investment-casting industry. Bolt sleeves, cocking pieces, guard parts, receiver and bolt seem to be precision castings, ala Weatherby. The extractor is a cute little sliding type set into front of right locking lug, ejector the plunger type as per Remington. A cap is pinned to bolt sleeve to cover firing pin head, or cocking piece (also a casting) but no flange to cover bolt stop and deflect gas coming back along left side of bolt—evidently the recessed bolt face is supposed to take care of gas . . . Sights appear to be made by Williams, are attached to barrel by screws and so are readily removable, leaving a clean, un-notched barrel. Rear sight is an adjustable nonfolding open type, looks good, front ramp good, with good hood, but both stick way up in the air, the rear being a real brush-snagger—it is evident that the rifle is designed for scope use, as comb is very high. I believe a target-type scope could be mounted and used comfortably! Stock has the pressed-in diamond type checkering now familiar on the Remingtons, has entirely new shaping, enlarged barrel channel giving about ⅛" clearance on the sporters. Only the 22" light rifle is made in standard calibers, the magnums only going over 8 lbs.

As a sporting rifle I can't see any objectionable inferiority in the new rifle, though I prefer the Mauser extraction and ejection system used in the old model, but why, oh why didn't they give it a new number, or a name if they are running out of suitable numbers . . . we can understand the desire to keep the prestige of the "70" and lack of desire to call anything the '700' and be confused with the competition, however the ad boys should have been able to come up with something helpful rather than troublesome! In about three years the parts situation will be a trifle confusing. The new 70 is the "Model 70 above 700,000," when you order parts.

I hear rumors of a new factory .22 centerfire, maybe two, .22/250 types in the now-discontinued Swift class. Evidently the furore of the 6mm's is settling down and something new must be promoted. Wonder how long before the .25's are back?

Ran into a couple of things in past week worthy of mention . . . undersize counterbore or cartridge clearance in bolt faces—believe I mentioned this once before, too. Anyway, when it's not a trifle oversize you can run into cases which won't chamber correctly, even though you can close the bolt with very slight effort. Ran into a magnum whose bolt wouldn't accept all cases of a certain make, so checked several bolts for fun, finding that the counterbore ain't always in the middle, too. And a sloppy bolt can move out of concentricity when it cams shut. I assume all people in the bench-rest business know this, but we ain't all in it . . .

And, some of the people who were happily scrounging 1963 NM 7.62mm cases at Perry may have found this out . . . they're big on back end. In checking magazine feeding on a .308 bolt job I was making for an Army captain, bolt closed hard. The NM 308 stuff proves to run from .46883 to .46994", against the normal .4655 standard. Canadian ball 7.62 checks out .4666" average, but all over is well under .466—our ball, commercial, and several varieties of match ammo. People with free rifles and a lot of ordinary bolt .308's will find trouble closing bolts on all of the NM stuff.

This 7.62mm, or .308, caliber is a doozy for "long range" reloading. You need Western cases. Others won't hold enough of the powders you must use with heavy bullets.

I've been told of an experimental military powder that will give almost 30-06 ballistics with boiler-room to spare, but can't see that it'll be much help to us.

Now we got to go back 30 years and start spinning bullets again, I guess. Bill Wolf in New Mexico started playing with some 180 grain match boattails and a dial indicator to check point run-out. Shot groups at 600 and 1000 yards. Seems the bullets with much run-out shot groups just twice the size of those selected for minimum wiggle. This indicates something, I fear. Namely, that I got to make myself a testing gadget again. Would have been very nice to have had one more V in that Wimbledon shoot-off last year . . .

TOURNAMENT CIRCUIT

BROOKLYN, NEW YORK

Thirteen four-man teams and twenty-six two-man teams competed in the Metropolitan Rifle League's annual Club and Two Man Team matches at the II Corps Armory in Brooklyn January 19th. Matches were fired at 100 yards, indoors, with scope sighted smallbore rifles.

Madison R&P Club #1 team (N. J.) of F. Triggs, Ellen Glaab, W. Ritchie and R. Triggs won the Ossining Trophy and gold medals with a score of 1599-118X (Rans Triggs dropped the one point, an unusual occurrence). Roseland R&P Club team (N. J.) of J. Holle, F. Boyd, K. Stannard and A. Battisto took the silver medals with a score of 1599-117x. Bronze medal winners were A. Rosenblatt, H. Stone, J. Lantelme and Sam Tekulsky, representing the Roosevelt Rifle Club (N. Y.) and scoring 1597-122x.

W. Ritchie and R. Triggs won the two-man team gold medals with 800-59x, but only by outranking R. Truesdell and E. Clausen who took the silver medals with another 800-59x score. Bronze medal winners were J. Holle and F. Boyd with 799-68x.

Five had individual aggregate 800 possible scores, J. Holle leading with 67 X's, R. Truesdell 63, F. Cole 57, E. Clausen 57 and W. Ritchie 54.

MODESTO ,CALIFORNIA

On January 11 & 12, 1964 the Modesto Rifle Club held its annual January Gallery Rifle Shoot with 99 competitors.

Grand aggregate winner was Vic Zimin, Santa Rosa with score of 790. He was followed by Fergus Ward, Albany 789, Arlen Amaral, Orinda 786, and Duane Jener, Mo-

desto 785.

Hi-Expert was Johnny Violini, Gonzales 772; Hi-Sharpshooter Richard Chase, San Francisco 768; Hi-Marksman John Whitman, Alameda 754. Colleen Patterson, Sacramento with 744 was Hi-Lady, and Barry Littell, San Francisco, with 763 was Hi-Junior.

The Club has been trying to accommodate the shooters and were running three relays every hour. The club members worked hard and the shoot ended Sunday at 7 P. M.—on schedule.

The Modesto Rifle Club is planning to expand its gallery range from 12 to 18 firing points. This expansion should be completed in time for their March Merchandise Shoot on the 14th and 15th. An NRA Sectional will be fired at Modesto Apr. 18th and 19th.

FORT BENNING, GEORGIA

PISTOL RECORDS CROWDED: In an outstanding exhibition of shooting 19 competitors in the monthly pistol shoot sponsored by the Fort Benning Rifle and Pistol Club scored aggregates of 2600 or more. The two-day shoot drew 75 Army, Marine Corps, Police and civilian competitors.

SFC William Blankenship, current National Handgun Champion and member of the USA MTU, was the winner with a score of 2662-140x, only a point shy of the national mark held by Capt. Franklin Green of the U. S. Air Force. This is Blankenship's third victory of four matches fired since the first of the year, his best start in competitive shooting since he entered competition eight years ago. He also won two of the sub-aggregates; 891-49x with .22 and 889-45x with .45.

Following Blankenship in the three-gun aggregate were SFC Loyd Burchett 2648-128x, SFC Ralph O. Thompson 2643-130x, and Sgt. Merriweather Jones 2640-117x. Burchett also won the Center fire aggregate with 883-44x to top Blankenship's 882-46x.

Sgt. Jones, USA MTU, broke the records for the .45 cal. service pistol agrregate with an 881-40x. The old mark of 879-34x had been held by Blankenship.

M/Sgt. George Snavely fired 200-19x in the .22 timed fire match to tie the mark held by three others.

Georgia State patrolman John Farley fired a 200-18x in the Center Fire timed fire match to tie the Police record for this event.

Random Shots

By Betty Summerall Duncan

"Break-through" is what the service shooters call it! That crucial moment—which seems an eternity to some—when the uphill struggle with spasmodic success has been surmounted. From then on out, consistent proficiency seems easy, or comparatively so. Your shooting progresses on an upward keel, and you wonder why you had so much trouble before.

This doesn't just happen. You work for it! For Olympic threat, M/Sgt. WILLIAM E. KRILLING, USA MTU, hard work wasn't enough. The break-through did not come for him until he changed rifles. Only then did the long hours of practice pay off. With a good rifle, he was well on his way. (Discretion requires that the rifles remain anonymous).

Krilling's shooting career began in 1952 at Fort Belvoir, Virginia. In taking High Service that summer at the Middle Atlantic States High Power Regional and the Engineering Trophy in the President's Match at the National Matches which were held at Ft. Benning that year, Bill was merely warming up for the real action. He reported for duty in Korea and started **shooting for record!** When it comes to "shooting heroes," Krilling is among the foremost. awarded the **Distinguished Service Cross** for bravery in action, he isn't likely to fold up from pressure on the firing line when no one is shooting at him! Wounded several times, his first concern was for his men and he saved many of their lives. He declined a battlefield promotion to 2/Lt., as he was reluctant to leave his outfit. Those doubting Thomases who need proof of marskmanship's role in wartime, might well take a look at Bill Krilling. He is still alive!

Now you know what manner of man other Olympic contenders will be up against at the final trials in July. Let me emphasize that these facts are in print as a result of extensive investigation. Krilling would never discuss it. Through it all, he has maintained his sense of humor. His infectious laugh, which we've mentioned before, eases tensions for all around him.

Our National International Champion is a man of few words when the subject is his own exploits. During a recent visit, I did manage to extract from him a few of his techniques. He believes, "First of all, a shooter should have a good nervous system, and good eyes. Of course, glasses can help the eyes, but I don't know what can help the nerves other than **not** using drugs, smoking, drinking excessively, and keeping late hours. You should always practice the same habits, and not change them for a match. I don't smoke, but I do stay up until eleven usually, and drink a few beers now and then—but I'm ready to shoot when I go on the firing line.

"Be sure your equipment is ready to go well before you shoot so you have no doubt in your mind that it is ready when you get on the line. Then, when you are ready to concentrate on what you are doing. In shoot, forget about everyone and really Int'l shooting, where you can't go to the sighter when in doubt, I always check my sight alignment first, then my sight picture, and when I go to my sight picture, I start the pressure on my trigger, being sure I don't overhold.

"I usually shoot my prone first when conditions are good, and try to shoot when the wind conditions are the same. This applies to all positions, because most of the time, no matter how good you are, if you have to change your sights more than a couple of clicks, you will get behind. From practice I found that there is usually a predominant wind, and always shoot in it, except for NRA matches where I can go to the sighter to check.

"I prefer the post in Int'l shooting because there is less to concentrate on and allows for quicker alignment, but because of the smaller bull, I use an aperture on the NRA target; however, I'm not through experimenting with the post on it yet. I never crowd the rear sight. I usually am back a couple of inches in the prone and 3 to 4 kneeling and standing. My sling is also low on my arm. I always squeeze my trigger, but I know approximately when it's going to go off. Some people shoot just to get the shots off. I feel that you should always try to shoot when your hold is best, which means that you have to really work on your position to develop your hold.

"When you try a new technique, try it awhile before you decide it's good or bad." Krilling considers that the most important factor in becoming a champion is "that you really have to have the desire to shoot and win if you are going to be any good."

Remember our friend, "Joe," whose troubles in gallery standing we told you about last month? We asked Krilling to at-

(Continued on Page Seven)

M/Sgt. William Krilling

DO-IT-YOURSELF JACKETED BULLET MAKING

By Phil Teachout

(Second of two parts)

CORE-SEATING: Putting the lead core in the bullet jacket and expanding the lead and jacket to proper diameter in the core-seating die seems a simple operation. It generally is, but variations in components may create little problems to solve.

The better die sets (squirt-die, core-seating die and forming die) are generally "mated", and usually for one particular make of jacket. With such sets, the pre-formed core will fit the particular make of jacket so neatly that it will take a light push to put the core to the bottom of the jacket. But different makes of jackets will (may) have variations. They may have slightly thicker or thinner walls, with a variation of the inside diameter of the jacket. Some may have a different inside taper, or none at all. Pre-formed cores may fit tightly or loosely in different makes of jackets. Cut-wire core slugs (not pre-formed in a squirt die) will fit loosely in any jacket and their use will require much more attention, inspection and checking during the core-seating operation in order to assure uniform outside dimension of the core seated jackets. In all core seating, frequent checking and inspection is called for if one is to be assured core-seated jackets of uniform outside diameter.

In my opinion, if any one operation in bullet making is more important than another, it is the core-seating operation. You can't correct past mistakes in the final bullet forming operation. A 0 to 1 inch micrometer is a necessary item of equipment for the bullet maker to control the correct and uniform bullet diameters necessary for good bullets.

To set up for core-seating, screw the die body and die into the press head until the core-seated jacket will stay in the die when the punch on the ram is withdrawn. The expanded core and jacket will then be very nearly of correct diameter. Measure the outside diameter of the core-seated jacket and make such minor adjustment of the die body as is necessary to obtain the correct diameter. (With LLF or Mity-Mite sets the adjustments are made with the punch holders instead of the die bodies.) The measurement should be made with a micrometer or vernier caliper and should be taken just ahead of the "pressure-ring" or bulge which will probably be formed on the base of the bullet. This "pressure-ring" is normal and will be up to .0005" larger than diameter of the body of the finished bullet. Die manufacturers and bullet makers recommend that the diameter of the core seated jacket be no more than .0002" **smaller** than the finished bullet will be, and most recommend that it be less than this. For myself, I expand the core-seated jackets of the smaller caliber bullets (.22 thru .25) to **no more** than diameter of the finished bullet, but for .30 cal. I keep the core-seated jacket diameter .0001" to .0002" **smaller** than the finished bullet, depending upon the length and weight of the bullet being made.

It is **most desirable** in core seating that the bottom compressing punch fits the inside of the jacket so precisely that no lead may escape around the punch ("bleed-by") when the work is under full compression. In matched die sets the core seater punch is usually made for such precision fit for one make of jacket and one bullet weight. If you wish to make bullets of different weights, or in different length jackets, or jackets of different makes, different size punches are needed to assure this precise fit. Since the inside of most bullet jackets has a slight taper (largest at the mouth of the jacket and tapering to a smaller diameter at the base), if one attempts to make much lighter bullets than the punch is designed for in a given make and length jacket, the lead core will obviously be shorter and the punch will go deeper into the jacket to compress the lead and expand the core-seated jacket. In that case, the sharp edges of the end of the punch will scrape the inner wall of the jacket, not uniformly, and may slightly upset the balance of the bullet. In some extreme cases, suction may draw the core away from the base of the jacket as the punch is withdrawn from the jacket.

If one attempts to make much heavier bullets than the punch is designed for in a given make and length of jacket, the end of the punch will not snugly fill the inside of the jacket when the lead core is under compression and some lead will escape back along the sides of the punch, causing the so-called "bleed-by." The lead escaping around the punch in "bleed-by" will cling to the jacket wall when the punch is withdrawn from the jacket. The lead deposited ahead of the core on the jacket walls as "bleed-by" will not be uniform in amount or in location on the jacket wall. When the bullet point is formed, the "bleed-by" deposit will be pushed up the jacket wall ahead of the core body and either curl over in the hollow nose cavity or, when excessive, may even extrude from the open point of the bullet.

Some bullet-makers and shooters consider any "bleed-by" at all to be fatal to bullet accuracy. Others believe that a small amount of "bleed-by" does not seriously affect bullet accuracy, all other things being equal. It does seem obvious that any "bleed-by" may upset the bullet balance to some extent and that it is desirable to avoid it.

There is a relatively small range of bullet weight variation that can be successfully made with one core-seating punch in any given make and length of jacket, this amounting to but very few grains weight. If one is content to stay within that variation range, he can get along very nicely with one core-seating punch. But if one would be continually experimenting with making different bullet weights, in different lengths and makes of jackets, as I have done, one will need a variety of core seating punches for the calibers he works with. If one has the facilities and know-how to make his own punches, having the needed variety of seating punch sizes is not much of a problem. But having any great variety made for you by others adds to expense and is more or less a nuisance. I have personally done some contriving in order to live with the "bleed-by" problem without getting special punches, with some degree of success, but that is something for the individual to work out for himself and certainly isn't recommended.

I have personally had very few core-seating problems in making the smaller caliber bullets (.22, 6mm and .25). I now use the jackets of one manufacturer (Sierra) exclusively. The range of weights I make with two lengths of jackets in each caliber is rather small. My core swages make cores that fit the jackets snugly. So, for me, core-seating in these calibers to avoid "bleed-by" and get the uniform diameter wanted is mainly a matter of inspection, frequent checking and making adjustments as needed.

I have had and do have core-seating problems aplenty in making .30 caliber bullets. I make a greater range of bullet weights, regularly from 125 grs. to 190 grs. inclusive. I now use four different length jackets, and while they are all manufactured by Sierra they are of two different types. The "My Special" jackets in 1.050", 1.150" and 1.250", which were made on special order for KENRU RELOADING SERVICE of Rochester, N. Y., and so far as I know sold only by that firm, have slightly thinner jacket walls than the regular Sierra .30 caliber jackets, and so have a slightly greater inside diameter. Cores made in my swage made to fit the regular Sierra .30 caliber jackets are a "rattling" fit in the "My Special" jackets. Cores made in another die that I had made, supplying sample jackets for fitting, are better but still not a snug fit in the "My Special" jackets. In spite of core-seating problems, I like those "My-Special" jackets. Bullets form nicely in them and the two longer lengths are the only .30 caliber jackets I know of which permit making good hollow-point bullets of 170 to 190 grs. weight.

My chief problem is to consistently get uniform diameter, round, core-seated jackets, especially in seating cores for the heavier bullets. From experience I have adopted an operating system similar to that which I use for swaging the cores—after one full compression, partially eject the unit and then put it under full compression again before ejecting it from the die. That generally brings the core-seated jacket up to the uniform diameter desired, but not always. Even with this system some units will be under-size and in almost every such case, slightly out of round. Putting the unit back in the die and under full compression again, once and sometimes even twice (with unchanged die adjustment) will invariably bring the core-seated jacket up to standard size and roundness. But there is such inconsistency in this operation that I now measure every core-seated jacket to make sure it is up to standard before passing it along for the final forming swaging. My "guess" is that the greater mass of the heavy .30 cal. bullet cores requires a greater time under compression to fill out and expand the jacket to size. In spite of this problem and time consuming operation, or perhaps because of it, I enjoy and get the greatest satisfaction from making these .30 caliber bullets. So long as I do get good and accurate bullets, I don't begrudge the time and effort it takes to make them. This problem is not so ornery when making the lighter weight bullets, or when making bullets in the regular Sierra jackets. I would suspect that similar problems might be encountered when making bullets with cut lead wire slugs instead of formed cores, especially in the larger calibers.

When I want to hold the extreme weight variation of a batch of bullets to a minimum, I "mate" the cores and jackets before the core-seating. "Mating" is simply weighing each core and jacket together. There is some weight variation in any lot of good bullet jackets and the extreme variation is usually greater than it is in carefully made pre-formed cores. A minimum weight core in a minimum weight jacket or a maximum weight core in a maximum weight jacket account for the extremes of weight variation in a finished batch of bullets. "Mating" the cores and jackets eliminates the extreme weight variation in a batch of bullets before they are core-seated and swaged. "Mating" is another time consuming chore but it does offer some control of one known variable.

The outside of the bullet jackets MUST be lubricated before running into the core-seating die; otherwise the jacket will "freeze" to the walls of the die and be extremely difficult if not impossible to eject from the die. Most die makers supply a lubricant that they recommend for use with their dies. Plain anhydrous-lanolin is the cheapest satisfactory lubricant and it can be obtained at any drug store. It is not quite so pleasant to use as some of the compounded lubricants available. I have used several different recommended lubricants for bullet making. They have all done their job but I personally prefer the lubricant supplied by Biehler & Astles (1597 Ridge Road West, Rochester, N. Y. 14615). Bullet makers use various methods for lubricating the jackets and I have tried several

of the methods myself. The most commonly used methods are probably; rolling the jackets on a pad impregnated with the lubricant; or putting the lubricant on the thumb and forefinger and rolling each jacket between those digits. The thumb-and-finger method is the messiest but it is the method I personally prefer to use. A light, uniform film of lubricant is all that is necessary.

SWAGING: Swaging the bullet (forming the point and bullet to finished form) is in my opinion the simplest and quickest operation in bullet making, once the equipment is correctly set up and adjusted. But problems to cause grief can be encountered.

The swaging die set will need be adjusted, by trial and "feel," to a point where the punch will push the bullet into the die far enough to permit the ejection pin to bear firmly on the entire circumference of the hollow point in the end of the bullet jacket, but not so far as to force the point up into the ejection pin passage. For the beginner, not yet accustomed to the "feel" of the different operations, this may be a chore and, without warnings, he may encounter his first "problems" right here.

The ejection pin of some die sets is retracted by a spring after the bullet is ejected. In the LLF and SAS Mity-Mite sets, the ejection pin is retracted mechanically. Should the ejection pin become slightly bent, or should the pin and its passage in the end of the die become so dry that the pin does not work freely, the spring may not reliably retract the pin. Watch out for this always. If the spring retracted pin doesn't retract reliably and promptly when pressure on it is released, seek out the cause and correct it before going any further. If the pin does not retract, and a bullet is pushed into the die, the point of the bullet will form **around** the pin and bind the pin firmly into the point of the bullet. If that happens, you are in a fix and will spend some time and do some contriving to get pin and bullet separated.

Swaging the bullet requires the most pressure of any of the press operations. A continuous, fairly fast, full stroke of the press handle seems to work best for this operation.

When you are first learning to adjust the swaging die, take it easy, go slow and feel your way along. Make your first adjustment to require at least as much pressure as you used in core-seating. If you are using an ejection frame or some other mechanical method of ejection, retracting the press handle will of course force the ejection pin down. We will assume that you are using some auto-ejection system. If on full retraction of the press handle the ejection pin meets no resistance, the core-seated jacket hasn't entered the die far enough for the ejection pin to reach the top of the lead core. If the ejection pin moves more than a relatively short distance, and you first feel a "soft" resistance to it, the pin has gone through the bullet point opening and is touching the lead core—don't force it further. Adjust to push the bullet farther into the die. If the ejection pin, after traveling a relatively short distance, meets a firm resistance, and then abruptly "lets go" to a soft resistance—STOP. The pin has contacted the open point of the bullet, but only the inner edge of the circumference of the nose jacket wall, and has pushed through the open point to the core top. If you continue to force the pin down you will simply push the pin into the lead core, which will tend to push the jacket walls tighter against the die walls, and you will end up with a "stuck" bullet in the die.

If you stop as soon as you feel the pin go through the bullet nose, make a small adjustment to permit the bullet to be pushed into the die enough farther to give the ejection pin a full contact on the bullet nose. If the pin is the spring retracted type, friction in the bullet nose may hold it and you'll have to withdraw it by hand. Do this before putting any more pressure on the bullet.

Once in a great while a bullet jacket a bit shorter than standard will be encountered. When such a core-seated jacket is swaged, it won't go into the die far enough for the point to support the ejection pin and the pin will go through the point opening. When that occurs, put a buckshot or piece of lead wire of about that size on top of the punch and put full pressure on the bullet again. That will usually push the bullet far enough into the die for the nose to support the ejection pin, and saves any monkeying with die adjustment. When ejected, the bullet base will be concaved and should be scrapped.

If the bullet is pushed too far into the die, the point will splay out into and to the diameter of the ejection pin passage. When this happens, the bullet will eject OK but the bullet will be scrap and the die need further minor adjustment (backed out a bit).

If you do get a "stuck" bullet in the die (and what bullet maker doesn't some time or another?) the time honored method of removal is to disassemble the die from the die body, clamp the die in a padded vise, screw a long shanked wood screw, of smaller diameter than the bullet, through the bullet base and into the body core. Then, clamp the screw shank in the vise and gently tap the die off the bullet with a hammer and wooden dowel. I find that it is desirable to drill a small hole through the center of the bullet base and into the core to provide better entry for the screw. If you first tap the die **and bullet** off the screw, drive the screw in farther and try again. If you finally pull the lead core out of the jacket, which remains in the die, find somewhere a screw just enough bigger than the inside of the jacket for the thread to bite into the inner wall of the jacket, and tap the die off the jacket, which will then usually come out easily. By now you may be getting disgusted with bullet making—but you will have licked what is probably the toughest problem in bullet swaging.

Jackets need to have lubricant on them for the swaging, but not too much. If too much lubricant is used, oil dents will be formed on the bullet Ogive (point), similar to the dents in the shoulder of cartridge cases when too much lubricant is used for full-length resizing. There is usually nearly if not quite enough lubricant left on the jackets after core seating to serve for swaging. My method is to put just enough lubricant on my finger and thumb to feel slightly greasy when it is well rubbed in. Then I roll each core-seated jacket between thumb and finger to "warm-up" and evenly distribute the lubricant already on the jackets before inserting in the swaging die. This method seems to work well for me. I am a little more generous with the lubricant on the first one or two bullets when starting to swage in an already adjusted cold die, and even more generous when starting to swage after having had to extract a stuck bullet. When breaking in a new die I usually wipe out the die cavity with a solvent saturated patch and following dry patch, and then apply a light film of Molykote before starting to swage.

WRAPPED BULLET POINTS: An occasional defective jacket will split lengthwise from the open end when the point is being formed. You will recognize this happening by a quick let-up in pressure near the top of the pressure stroke and (if your hearing is normal) a distinct "snap" as the jacket splits. The bullet will eject from the die normally, but should be thrown in the scrap box. If loaded and shot, the wrapped point will open up and the bullet fly wild in any direction.

You may not find a single jacket with this defect in some lots of 1000 jackets, or you may find several in another lot. I don't think the manufacturer has any sure, practical means for inspection or control of this defect. It's just one of the minor hazards that we have to put up with.

DEGREASING: I believe some bullet makers remove the lubricant from the bullet jackets, after the swaging, with commercial solvents. Some, I know, tumble small batches of bullets in turkish towelling. I personally use the slow and tedious method of wiping each individual bullet on a paper towel.

I am not at all sure that degreasing the bullets after swaging is necessary. I have shot a great many of my bullets without any degreasing after swaging, merely wiping the base of the bullet when seating in the cartridge case to assure that powder did not come in contact with grease. I have never been able to feel a bit sure that accuracy has suffered a bit when shooting the bullets with the residue lubricant left on them. However, the degreased bullets are pleasanter to handle and, since I **do** feel quite sure that degreasing **does not** harm accuracy, I'll probably continue to degrease—by my slow and tedious method.

CONCLUSION: If experienced bullet makers have waded through the foregoing, it will probably have been only to pick flaws. It was not intended for people who have had as much or very much more experience in bullet making than I have.

I have received complaints that what the writer had seen published about the home-making of jacketed rifle bullets was apparently directed to people who already had considerable experience in bullet making, and was of little help to the beginner bullet maker. If the foregoing should prove to be any help to the beginner or prospective beginner, I shall be well repaid for doing it.

Bullet making and ammunition reloading are strictly hobby projects for me. They serve as relaxing evening exercise after a day at the desk, or making some good use of time on foul weather weekends. Time spent on some of the slow methods I use, and some of the perhaps unnecessary operations I do, is unimportant to me. I enjoy ammo loading and bullet making and I do not begrudge time spent in operations that I only "think" may aid accuracy.

My parting advice is: Go slow, especially at the start. Pay strict attention to everything you do. Learn the "feel" of each operation. If anything doesn't "feel" as it should, STOP right then and investigate. Something is probably going whacky and you had better find out what it is and correct it before you get in a mess. Get acquainted with the peculiarities of your equipment. Learn from your mistakes. You can make good bullets from the start and you will make better ones as you gain experience. You will get enjoyment and satisfaction from the accuracy you can obtain with bullets you have made yourself.

A PRECISION PRIMING TOOL

The Precision Priming Tool, being made by The Gun Clinic, Mantomedi, Minn., is really a small, precise, hand-operated "machine" rather than a "tool." It is made for the one job of priming center-fire cartridges. It is a bench mounted "machine." It is very well designed, very well made, nicely finished and does its job efficiently, precisely and with dispatch.

The base of the machine is a casting 5½ inches long by 3½ inches wide with projecting ears on each corner, bored for the four mounting screws, and integral raised blocks on each end on which the working parts of the machine are mounted.

A traveling head 2¼ inches wide by 2¼ inches high by 1⅝ inches long, carries the shell holder and primer feed mechanism. It is bored through the lower corners and rides on two polished rods, ⅜ inch in diameter, which are screw fastened on each end in milled notches in the raised blocks of the

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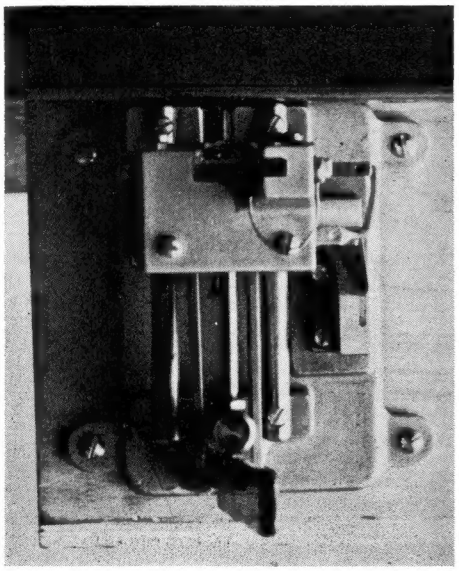


Looking down on the top of the Precision Priming Tool, with traveling head in forward position to accept cartridge head and primer from the feed tube (not shown). On the outside are the two polished rods on which the traveling head rides. Inside those are the two link-bars that connect the traveling head with the operating handle. In the center is the priming punch which screws into the top of a sturdy post rising from the base. The primer seating adjustment rod is directly under the priming punch and threaded through the base of the travelnig head.

Precision Priming Tool

(Continued from Page Five)

base. The traveling head is connected to the operating handle by two link-bars, to pull it on the rod-rails without binding. The traveling head (a milled casting) has a raised projection on the forward right-hand upper corner, milled to accept the primer feed-tube.

The shell holder is a 1½ by 2¼ plate that is positioned on the face of the traveling head by two small studs and fastened to the head with screws in the four corners. The shell holders are precisely notched on opposite edges to accommodate two case-head sizes. (The shell holder on the sample I have to test is the standard for 30-06 and 38 Special case head sizes.) To change, the four attaching screws are removed, the plate rotated 180° and replaced.

The priming punches are approximately 3 inch by 3/16 inch rods, threaded at the rear end to screw firmly into a ⅝ inch stud rising from the rear base-block, and provided with a lock-nut. The front ends of the rods pass through a hole in the center of the traveling head and are precisely turned and faced for large and small diameter, flat or rounded faced primers (four different punches).

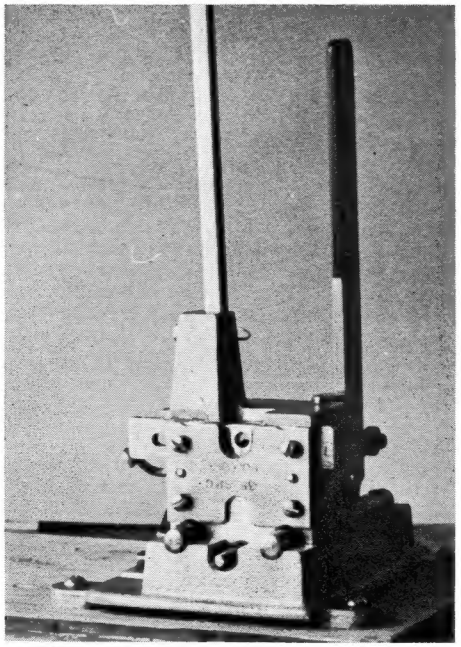
The primer feed mechanism is the "heart" of this little machine. A cross-head primer feed-bar, 5/32 thick and ⅝ inch wide, and 3⅜ inches long, is positioned in a milled slot in the traveling head, ⅛ inch back from its face. The bar is slotted to permit each of the top shell holder anchor screws to go through it and get a firm bite in the traveling-head casting, and long enough to permit the required end-wise travel. The bar has a precisely positioned notch on one edge for the large diameter primers, and a similar notch on the other edge for the small diameter primers. The bar is reversed, end for end, to accommodate the size primer being used. A camming arm is pivoted on the right side of the traveling-head. One end contacts the end of the feed-bar and the other rides the cam which is fastened to the base casting.

In operation, with the traveling-head in forward position the primer notch in top of the feed-bar is positioned under the primer feed tube to receive the primer. As the traveling-head is drawn to the rear by the operating handle the camming arm rides up the cam to push the feed-bar to the left and carry the primer to its position in front of the primer punch. When the primer carrying notch in the feed-bar reaches its proper position in front of the primer punch, the camming arm will have reached the top of the cam and now rides along the flat top of the cam block and holds the feed-bar in position while the primer is being seated. With the primer seated, and the traveling-head being pushed forward, a light coil spring extending through the traveling head and fastened to a screw-stud in the bottom of the left-hand end of the feed-bar, draws the feed-bar back to position with the primer notch again under the primer-feed-tube to accept another primer and complete the operation cycle.

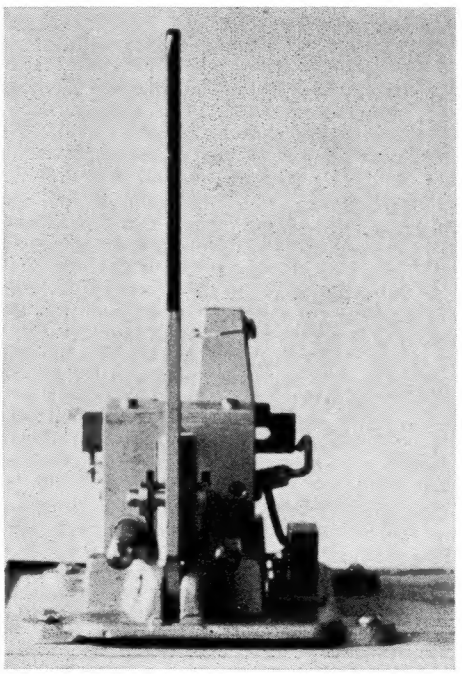
Primer seating depth adjustment is accomplished by a threaded rod through the base of the traveling-head, the rear end of the rod being footed to contact a stud in the rear base-block to stop the rearward travel of the head. The front end of the rod is slotted for screw-driver and there is a lock-nut to lock the adjustment. With the traveling-head in forward position, the front end of this rod is easily accessible for adjusting, when—if that is necessary.

The primer magazine feed-tube is oval in shape to accept the primers edge-wise and its inside widest diameter is slightly greater than the diameter of the large primers, to permit free downward flow of the primers. Small diameter primers "stagger" in the same tube, as do cartridges in a normal Mauser type rifle magazine.

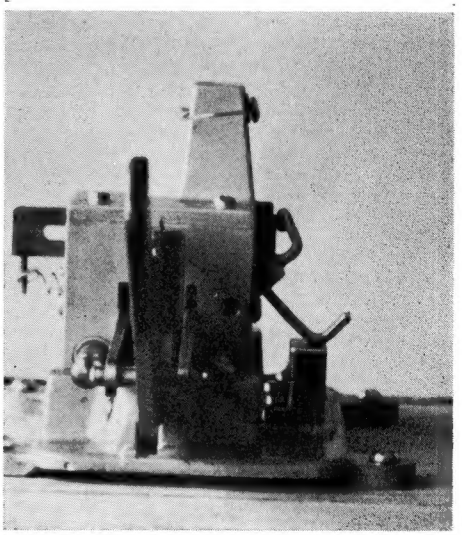
Primers **are not** loaded directly into the magazine feed-tube. They are first loaded into a loading-tube of the same shape and size as the feed-tube, one end of which is partially closed. A flat, triangular tray is provided to dump the primers on and turn all either open-end up or down before loading. Provision is made for the loading



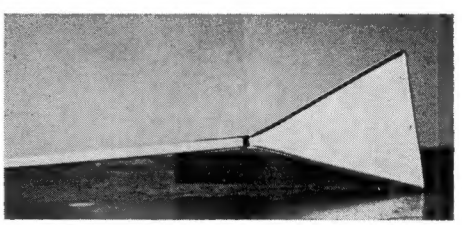
Looking at the front of the Precision Priming Tool, with primer feed-tube in place. The two caliber shell holder is fastened to the traveling head by the four screws in the corners. (The 30-06 case-head shell holder is in place for operation at top and the 38 Special case-head holder is inoperative at the bottom.) To change shell holders, the four screws are removed and the plate rotated 180°. The end of the primer seating depth adjusting stop screw is exposed in the center notch of the base block.



Looking at the rear of the Precision Priming Tool, with the traveling head in forward position. The top-right projection accepts and supports the primer feed tube (see also top view). Projecting on the right at top is the end of the primer feed-bar, in position to accept primer from the feed tube. Touching the bottom of end of the feed-bar is the top of the cam lever which pushes the feed-bar to the left as the traveling head is drawn back to seat the primer. The camming stud projects from the base at bottom-right.



Looking at the rear of the Precision Priming Tool. The operating handle has been pulled back, drawing the traveling head to the rear, over the fixed primer punch. The camming lever has moved up the cam and pushed the primer feed-bar to the left to position the primer ahead of the end of the primer punch in time for the punch to push it into the primer pocket and seat it, as the traveling head moves to the rear. The feed-bar return spring is attached to the screw-in stud on the bottom of its left end.



The Precision Priming Tool primer loading tube in place in the throat of the primer sorting and feed tray.

tube to fit into the narrow end of the tray for convenient feeding of the primers into it. A flange on top of the magazine tube permits the two to conveniently join and the primers are thus dumped from the loading tube to the magazine, care of course being exercised that the open end of the primers are toward the cartridge head.

Both the magazine and loading tubes hold 50 large diameter primers. Any hang-up of the mechanism seems to be extremely rare. With both tubes loaded, one can prime 100 cartridges in a very short time.

All change-overs and adjustments of the machine may be readily and conveniently made. Complete disassembly and assembly of the machine (if that should be necessary) is conveniently provided for—you can SEE where everything goes and what it does; there aren't any hidden gimmicks to foul one up.

While the price of $28.80 may at first seem high, considering the sound design, high quality of material and workmanship, and the speedy, precise job that it does, I think one receives a good value.

P. H. T.

UNERTL "POSA-MOUNT" SYSTEM

In this writer's opinion, the new Unertl "POSA-MOUNT" system for their target type telescope sights is a very desirable and long needed improvement over old style mounts.

The accompanying picture and the cut-away picture on the cover illustrate the features of the new mounts. The split base of the mounts and the new design clamp screw assures complete contact of the surfaces of the female dovetail of the mount base with those of the male dovetail of the attaching base on the barrel, instead of the one side and one edge contact of old style mounting systems. The new style clamp screw, with its generous size shoulder fitting into a matching notch in the barrel base, provides a strong control of fore-and-aft movement, which is especially important when the scope is used on rifles of heavy recoil.

Old style Unertl mounts may be converted to the new "POSA" type at a cost of $12.00. The mounts (preferably with the scope) must be sent to the factory for the modification. New bases for the "POSA" type mounts may be purchased, or old style bases may be returned to the factory to be gashed to fit the POSA-MOUNT clamp. The cost for gashing is $1.60 per set of two bases.

"MAGNUM CLAMP" The new Unertl "Magnum Clamp," recently and presently advertised, is a very desirable replacement for the rather skimpy clamp ring forward of the front mount of target scopes for stopping rearward travel of the scope.

The MAGNUM clamp is a three-piece assembled ring ,fastened together at the top by a socket headed screw (similar to some hunting scope mount rings). The clamp ring is 7/16" wide and of 3/32" stock. The width of the clamp ring prevents any fore-and-aft rocking of the ring. The thickness of the ring sides assures uniform contact with the front face of the mount rim and no possibility for "riding under" an edge of the mount ring to cause non-uniform positioning from shot to shot. The clamp is available for ¾", ⅛" and 1 inch tube sizes.

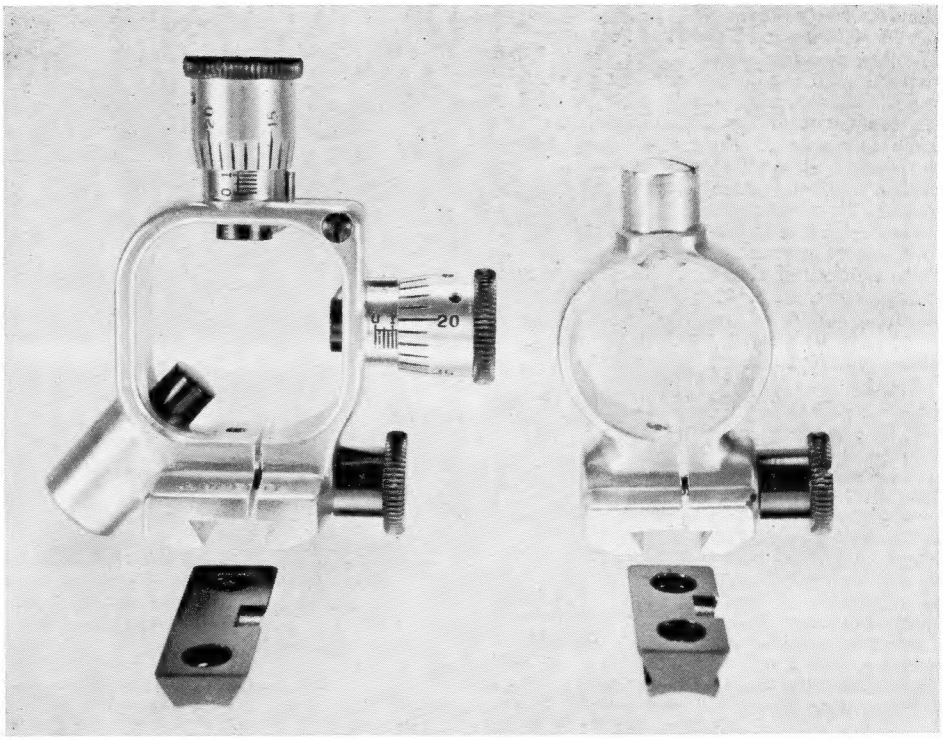
I am using one of these "Magnum Clamps" and I am very well pleased with it.

P. H. T.

Random Shots

(Continued from Page Three)

tempt a diagnosis of the problem, and his initial reply is typically Krilling—: "It seems you asked the real 'eight ball' on gallery shooting a question which may be hard for me to answer. In my last two gallery matches, one in Kansas last year and this one in Texas, standing is what hurt me. You see, I had 791 in both matches and dropped them all standing both times. I did it with 9 nines in both cases—which goes to show my hold wasn't bad, but I was just going a little past my good hold and they were breaking on the way out."



The new Unertl "POSA-MOUNT" target telescope mounts and bases.

Krilling is more of an outdoor man, and we concluded that he, himself, seemed to have a problem with gallery standing. In gallery, a fraction of an inch difference in the placement of the feet can communicate that difference to the bull. Outdoors it isn't as critical because of the conditions factor and larger bull. Krilling conceded that he might be forcing his position a little in gallery standing. Results of his next gallery match will be interesting.

Returning to Joe, despite what Bill has confessed regarding his own weakness, he has some good dope. "The only thing I can say is that the trouble is strictly mental. In practice, a person is a little more relaxed and, therefore, you shoot almost when you want to (relaxed). In a match, you go fine, and then comes standing and you know you can really tear things up, so what is the first thing you do? You try to make them just a little better and over hold. You lose a couple, then the pressure is on and you try harder until you lose a few more. And then, you realize you have gone to pot and there is no hope, so you relax and shoot the rest of them in.

"I believe the best thing a shooter can do is get a little aggressive. In this manner I doubt if he will over hold or sweat the match. Play cards with your buddies, check your equipment so you are sure everything is ready so you have no doubt in your mind, and above all, no matter how bad things seem to go, never give up. It won the Int'ls in Texas for me, and lost the match in California. Keep your mind on what **you** are doing and forget about everyone else. As for secrets—I don't think we have any. It's just deep concentration!"

Krilling is a formidable competitor and one with vast international experience. Shooting is a serious matter to him. He has excellent ideas on the psychological aspects of competitive shooting, one involving the principle of self-hypnosis to promote absolute concentration. A natural, all-around shooter, he is a component part of U. S. Int'l strength.

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Inter-service practice matches, of a friendly, informal nature, are in progress at Ft. Benning (at this writing). Beginning February 4, approximately a week was to be devoted to 3-positional smallbore, followed by another week of Free Rifle (300-meters). With the Air Force, Marines, and USA MTU on hand, it will be a good opportunity for the Int'l nucleus to warm up and pace themselves.

The end of February they surge on the attractive Florida tournament cycle. First, there is the indoor sectional at Hialeah, then the Sawgrass in Miami, followed by National Mid-Winters at St. Pete(revived after a brief lapse), and rounded out with the Silver Dollar at Winter Haven. That affords 12 days of actual shooting between February 29 and March 15. The progressive Florida State Smallbore Association has its ears tuned to Int'l needs.

USA MTU and USMC MTU teams embark in late April for a week of shooting at Wiesbaden, West Germany, then on to Switzerland for—what else? More shooting. They are scheduled to return the latter part of May, in time to practice for the Inter-Service Int'l Championships, to be fired the end of June. This all-out preparation will be climaxed by the National Internationals and Olympic trials which, it seems reasonably safe to predict, will be fired at Ft. Benning about the first two weeks in July.

We'll try to keep you informed of all developments pertaining to our potential Olympic squad.

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On his second parachute jump, Pres Kendall badly sprained his right ankle, but was able to resume jumping the end of January. . . . Regarding the rumor that Pres has changed some of his ideas since we wrote about his techniques—Pres maintains that the only change is that he has become more convinced of the necessity for a cast off 1" stock, cast right off center. He has his old 37 back from Womack now, and plans to use it to good avail in Florida.

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Since the December and January issues of P. S. went into the mail, we've received so many requests for the address of the maker of the Kenyon trigger that we are thinking of charging Karl a service charge. Just kidding, of course, for it is a pleasure to be of service to our readers.

And, speaking of readers—how interesting it was to read Colin Shadbolt's "On Target!" in the December issue of Australian OUTDOORS! Mr. Shadbolt has been reading Precision Shooting, and much of his column was based on data taken from our

(Continued on Page Eight)

(Continued from Page Seven)

Western Nationals story. He seemed impressed with the scores and the equipment used. His purpose was to give comfort to his readers with the information that they have available to them the same sort of equipment as do our crackshots . . . For such a small magazine, P. S. does cover the globe! It would surprise you to know how widely read it is in Europe. A single magazine seems to make the rounds among a large number of shooters. They seem genuinely interested in what is happening in our shooting game, as we are in theirs. Vic Auer gave us a most gratifying report upon his return from Europe last summer.

***

Apropos of Fred Triggs' suggestions last month, there has been much discussion both here and abroad on the subject of giving shooters with imperfect eyesight some assistance and, consequently, encouragement to continue competing. This seems a good opportunity to amplify Fred's remarks. I knew that Fred was interested in contacts as he had questioned Vic Auer at length about them. I was not aware, however, that there were those who are using a single contact lens. That comes as somewhat of a surprise, for it was my understanding that the prerequisite for using contacts satisfactorily was to become accustomed to them, and I should think that it would be difficult to become accustomed to using a contact lens in only one eye. It interests me, though, and if it works for others, I'm tempted to try it myself . . . If that was what Fred used to shoot high score of 597 in the prone metallic Int'l-type outdoor postal match, I would say that it works!

The problem, Fred, is not confined to those with greying hair, as evidenced by the fact that Gary Olson, still a junior, is now using contacts successfully. Vic Auer, who pioneered contact lenses, hasn't seen 30 yet.

At the Los Angeles Rifle and Revolver Club, numbers on the frames are painted with alternating colored backgrounds (as Fred suggested), and I must confess that I still waste valuable time checking my number at 100-yds. iron. I must also admit that if my position were perfect, my sights would come up on the proper target each time, once I have it located. Fred's suggestion here is a good one, and worthy of consideration by all clubs—also the matter of using larger numbers . . . Worth trying would be the use of extreme color contrasts, such as red, white, and blue. With a yellow filter, a white background cannot be distinguished from the yellow one next to it.

Then, there are those whose left eye is their master eye, even though they happen to be right-handed. Bob Perkins is one of those, and my father also, since a handicapping condition has developed in his right eye. I ordered a Whittaker eyepiece attachment for him through the NSRA of England, which enables shooting with the left eye from the right shoulder. The principle is excellent, something of a periscope effect—**but,** in testing it out, we found one major weakness. It is not adjustable. It was obviously designed for factory stocks, and who shoots strictly factory stocks any more? No allowance is made for variance in facial contours, whereas, if it were adjustable, it would be a perfect solution. Wayne Raxter was so enthusiastic about it that he tried it with nearly every rifle on the line, but was unable to see through the sights. I finally found that by raising, or lifting, the sight attachment from the left, I could see very well, but it would necessitate a change in the placement of one's face on the cheekpiece. It is used in conjunction with the popular English-made iris eyepiece . . . These suggestions are offered, not in a spirit of criticism, but rather in the hope that the product will be improved. In that event, it would be very much in demand in this country.

By returning to the old 50-meter target (on which I learned to shoot), we should accomplish what Fred had in mind with a larger bull.

The Hensholt rear aperture, a diopter, has intrigued me ever since our Int'l Prone Team discovered it in Europe last summer. Larry Wilkens was one of the first to try it, and proclaimed the sight picture with it to be "beautiful." It is legal on the Continent, I believe, but not at Bisley. A ruling on it was requested from NRA, but my information is that it would require an elaboration on the present rule, 3.7. Since modified equipment and special positions are authorized for physically handicapped persons, I should think that by petitioning the NRA Protest Committee, as provided in the rule book (Rule 5.5 under "Positions"), that shooters with impaired eyesight could be allowed to use a diopter. The only drawback is that under the present rules, shooters granted such authorization would be ineligible to establish National Records . . Pursuing the subject, since the shooting sport is one of skill, it does seem ironic to reduce it to being something of an "eye test." Under certain light conditions, all the skill in the world combined with masterful knowledge of doping can't compete with a youngster's eyesight with metallic sights . . I say, let's keep the old-timers around as long as they are able to get in position on the firing line. They built up our shooting game, and if authorization of the diopter can prolong their shooting days, let's give it to them! . . . It is, incidentally, already being used in tournaments in this country. Although not used extensively, metallic sight scores with it have noticeably improved. As there appeared to be some question on its legality, some shooters decided to try it, meanwhile waiting for a ruling to be announced.

It has been suggested that. in lieu of using the diopter (illegally, until legalized), similar results might be obtained by borrowing a Hensholt diopter long enough to experiment and determine the correct focus point. Then your optician could duplicate it with a correction in your lens adapter. This would be perfectly legal, as it would contain only one corrective lens.

***

Connecticut's experiment in **International Gallery** proved highly successful on January 25-26 as 36 competitors traveled to the Blue Trail Range from as far away as Maine, New Jersey, New York, and Rhode Island. Any sights were the order of the day on the half ISU course. Being accustomed to strictly scope shooting for gallery in that area (except for junior and collegiate events), the idea is to adjust to the ISU 50-ft. target before adopting the metallic sight phase of Int'l. Classifications were like something out of Pandora's box, as outdoor ISU classifications took precedence over standard gallery classifications. Long-time Masters turned up as Sharpshooters and even Marksmen.

Los Angeles Rifle and Revolver Club Team, which unofficially defeated the Yorkshire, England, Club. (left to right) Standing: Dave Ridenour, Russ Van DeVender, Elinor Bell, Club President Forrest O. Kline, Leonard E. Reich (Alternate), Wayne Raxter, Bob Walline (Alternate). Kneeling: Ed Herrmann, Mike Allen, Tom Guerin, Carl Herriman, and Bob Boydston. Photo by Carl Knight

By virtue of their outstanding 175 and 174 standing scores, leaders in the Aggregate were **Walter Horvay,** West Goshen, Conn., scoring 562, and **Carl Morrison, Jr.,** of Bangor, Maine, a point behind. **Virginia Williams,** Stamford, Conn., firing as a Sharpshooter, placed third with 557.

In the Prone match, Gilbert Graziani, Torrington, Creedmoored Harold Slocum and Virginia Williams' 199's. Kneeling, Graziani's 191 win was also a Creedmoor over Virginia.

Class winners were: **Prone**—Adam Wasicki, Expert—198; Frank Williams, Marksman—198; Charles Green, Uncl.—192; **Kneeling**—Horvay, Master—189; Donald Cloke, Expert—179; John Troja, Marksman—186; Duff Aukerman, Uncl.—168; **Standing**—Charles E. Lyman, IV, Expert—162; Virginia Williams, Sharpshooter—167; Frank Eichler, Marksman—169; Paul Acker, Uncl.—149. **Aggregate:** Graziani, Master—554; Slocum, 2nd Master—553; Ronald Walton, Expert—516; Leo Zieller, Sharpshooter—532; Frank Eichler, Marksman—549; Acker, Uncl. —498.

***

Glowing reports are coming out of Maryland and D. C., arising from the spectacular performance of a petite, 17-year-old Navy Junior—**Patricia Kinsella.** At the Frank Parsons Memorial Tournament on the NRA range, January 12th, Pat claimed two National Records with her **200 plus 57 additional 10's,** metallic sights, Sitting. Surpassing the endurance effort produced to date by service and reserve shooters, her new records are for the Women and Junior categories. It was her father, Capt. Kinsella, who sparked the career of this young champion three years ago, which quickly led to the Illinois State Junior title.

Freeman Morgan, the mainstay of the Greenbelt Gun Club, is so enthusiastic about Greenbelt's newest member that I think I'll just tune you in on his remarks—: ". . . . I'll pass along this squib about our rising young female star, or maybe I should say, 'our risen star.' She came to our area from Great Lakes, Ill., last summer after Perry. She was already a very accomplished shooter and a veteran of the Illinois All-State team. She has been shooting a used model "C" with a **three** pound trigger and no hook or palm rest. She **expects** to top 90 in the standing with iron sights and does so most of the time. Her junior postal

this month for prone-standing was 192. She hasn't been under 190 in the three months so far.

"She is about your size and the gun looks bigger than she does, but she makes the six foot plus boys look foolish when the scores come out. You know that I've been around awhile and I've seen them come and I've seen them go. I've always taken an interest in juniors—the champions and the workers who will have to take our places when we are ready for the arm chair. Further, I've been especially interested in the girl shooters, because I married one, and I think they are pretty swell competitors to have around!

"Well, as I see the girls who have passed through my clubs in the past two decades, Patricia Kinsella is the one with the greatest potential. She is more serious about learning how to become better, she is more dedicated to shooting, she asks for less help from her family and friends, she analyzes her own faults and the faults of her gear that should be corrected before the next shoot. She is not cocky or conceited and she does not treat her elders as carry-overs from the nineteenth century. Most girls who are stars in high school or college are out of the game before they ever hit 25 and few ever see a range again. I predict that Patricia will marry a shooter and stay in the game for a quarter century or more. Right now she is looking for a college with the right balance of learning and rifle to properly further her career. You'll hear a lot more about this girl in the next few years from other pens than mine. Her brother is making a name for himself at Georgia Tech and there is a younger sister who is coming along nicely, too."

Words of wisdom are contained in this tribute! There is no room for temperament on the rifle range—either among juniors, women or men shooters, or the non-shooting workers. Personality clashes from the latter category can be the most poisonous to a club.

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"The challenge trophies won by American competitors at Bisley were put on display at an outdoor sporting equipment exhibition which was promoted by the USA Government in London and drew favourable comment," according to the English RIFLEMAN.

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Tom Guerin's 400 possible was the only clean score on either side of the Atlantic in postal team competition between the **Yorkshire, England**, Club, and the **Los Angeles Rifle and Revolver Club.** Tom's name is familiar in England, where he shot for several years while attached to the Jodrell Bank Telescope, a missile tracking station. He placed 8th at Bisley before returing to the States.

Unofficial results show the Los Angeles Rifle & Revolver Club leading the Yorkshire team by a slight margin. Neither team was up to par, possibly due to conditions. In Los Angeles, it was one of those rare cold and dark days, with tricky winds. The course of fire was the metallic Dewar on standard NRA targets. We have scored the Yorkshire targets, and are awaiting their scoring of our team targets before releasing official results.

It is hoped that this will be the beginning of a series of trans-oceanic competitions. Any clubs interested in participating may write us, and I shall be happy to extend the invitation to our friends in England. Observing the Los Angeles Rifle & Revolver Club team's firing, my deduction is that all shooters could profit by more experience in international postal competition. It might even be more advantageous to shoot future matches on their (British National) targets. Perhaps the U. S. Dewar Team could make a better showing as a result.

.38 SPECIAL AND .357 LOADS IN REVOLVER AND RIFLE

(An Experimental Ballistics Associates Report)

Here are some of the results of a little testing that I have been able to do in the past few months. On the 200 grain Lyman bullet #358430: I cast these bullets using a mixture of wheel-weights with 4% tin added. This gives a very hard cast bullet, and the mix casts well and gives sharp clean bullets. With this mix the bullets, after casting and lubing, weigh 196 grains. I have been sizing these bullets .357", on the theory that pressure might be reduced a little. All of my tests have been fired in a Smith & Wesson .38/44 Outdoorsman, which has had the barrel cut to four inches. Various makes of small primers **used.**

I started with a load of 8.5 grains of Herco. This is a real good load, quite accurate, with not too much recoil. I believe I am getting close to 1,000 fps muzzle velocity. Then I worked up to your (Yard's) suggested load of 9.0 grains of Herco; this turned out to be a hot load in my gun, but still okay. I worked up to 9.4 grains and found this to be a **MAX** load in my gun. The cases extract okay and show very little signs of swelling, but in about one shot in five the primers would flow back into the firing pin hole and tie up my gun. This was especially noticed when using Herter's and CCI primers. I seemed to have the least trouble with Remington primers. So to be on the safe side I have dropped back to 8.5 grains and will use it for a standard load.

I didn't get a chance to try out AL-5 and AL-8 powders, as they are not readily available. If and when I get to a larger city I plan to buy a can of each and try them. I wanted to try using the CCI Magnum primers, but again they were not available.

In this part of the country, a great many shooters are buying Model 92 Winchesters in .25-20 and .32-20 calibers and having them converted to .357 Carbines. This makes a fine carbine for carrying in pick-ups or in saddle scabbards. With Marlin coming out with a factory model, interest in this cartridge will increase. I have been doing some loading for some friends who have these carbines and have come up with a couple of good loads.

Some of the boys wanted to use a heavy gas-check bullet. The only thing available was the Lyman #358315, the old .35 Remington bullet. This bullet works through these Model 92 actions like a charm. The load is 12.0 grains of H-4227 powder, small rifle primers, and .38 Special cases. The bullet is seated in the case past the front driving band and then the case is crimped into the metal. The over-all length of the loaded cartridge is 1⅝ inch. This gives a cartridge very similar to the old .35 S. L. R. and should give similar velocities. The same charge of powder also works well with the 200 grain #358430. Both of these loads are quite accurate to 100 yards and should make good brush guns for deer hunting.

I have also loaded the Thompson gas-check bullet #358156 hollow-point, using H-240. Personally, I don't recommend using over 12.5 grains of H-240 in the older actions. But I have one friend who has a carbine with a very tight action and tight chamber and his carbine will shoot 15.0 grains of H-240 with no trouble.

One of the points that must be watched with these Model 92 conversions is the length of the firing pin—most of them are too long. The gunsmith who does the converting should bush the firing pin hole and then carefully measure the length of the pin. This point is especially to be watched when some character uses the same loads in both a carbine and pistol and has his cartridges loaded with small pistol primers. If the carbine firing pin is the least bit too long it will puncture the primer and then you will get a face full of gas.

I am just a least bit afraid of some of the older Model 92 actions, as they weren't made to stand the 40,000 pounds of pressure that factory .357 Magnum loads give.

Emory O. Orton
Pawhuska, Okla.

National Bench Rest Shooters Association, Inc.

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NBRSA MEMBERSHIP DUES:

Individual annual dues $5.00 (includes magazine subscription for membership term). Associate member (wife or husband, son or daughter under 18 years of age, of member in good standing—no magazine) $2.50. Life membership, $75.00. Annual club affiliation fee $10.00.

PRESIDENT'S CORNER

At this time of the year a shooter's thoughts have left thoughts of being around home all winter and have transferred to the range. To a sudden surprise in this area, the weather has allowed us more outdoor shooting than usual for this time of year. Several clubs are holding the experimental shoots for hunting rifles.

During the month of January, you will notice in P. S., I am allowing more letters than usual to be published, both for and against any suggestions and ideas any member wishes to submit for discussion. I feel the only way for our discussions and information to reach members is through P. S., due to the fact that we are scattered over such a vast area. I feel that any member would welcome his ideas to be discussed openly, both pro and con. This is the only way the ordinary members will ever be able to express their feelings.

I am very sorry that I was unable to attend the Eastern Regional Meeting in Elmira (U. Y.). I had good intentions, but during the past two months I have been "playing" more than working, and as you know work must come before play. I feel sure a report will be published in P. S. on the results of this meeting.

During the year 1963, a number of records were broken. I received letters from shooters asking why it took so long to get a report on their target. I feel now is the time to pass on to each member some of the handicaps and causes of this. If you will act accordingly, I know your waiting time will be cut considerably. When you have fired a target, it must be forwarded to your Regional Director, who MUST have all data on the gun, ammunition, scope, load, bullet, and other necessary data. The above things are very important. They are then forwarded to the measuring committee chairman, who is Mr. Arthur Freund, 1038 Hornsby, St. Louis, Mo. If at this point he has not received the above information with the targets, your target is deadlocked until he procures this information by mail or telephone. The target is then touted out to the Directors of three different regions, other than the region the target was fired in. If these three Directors hesitate in measuring and forwarding the targets to the next Director, your targets are deadlocked again, possibly in triplicate. After the targets have gone to the three Directors, they are returned to Mr. Freund, who averages the Directors' measurements and compares the average with the present World Record standing. If it is smaller, N. B. R. S. A. is notified, and a certificate of recognition is issued. This will give an idea that if those involved do not issue the necessary data and the measuring committee does not take immediate action, time hastily wastes away to the eager and ambitiously waiting shooter.

I hope each club is well on the way to picking their shoot dates for the coming months. It gives visiting shooters much more time to plan attending shoots in other areas than their own.

Until next month I remain,

Sincerely yours,

A. W. Walter, President
NBRSA

RULE BOOKS

The new, revised Rule Books are now available and being distributed from the Secretary's office, 607 West Line St., Minerva, Ohio. The price is 50¢ per copy.

RECORDS

CORRECTION: There has been a typographical error in the published measurement of the 200 yard small group fired by Crawford H. Hollidge with Sporter rifle. The correct measurement of that Sporter Rifle class, 5-shot record group at 200 yards is **.3720 inch.** Please make that correction on your list of records and avoid submitting larger groups for judging in this category.

RECORD CERTIFICATE TO DAVID HALL: A record certificate was issued to David Hall, Warsaw, New York, late in January for a new Sporter Rifle Class grand aggregate record (five 5-shot matches at 100 yards and five 5-shot matches at 200 yards) which is officially judged at .4787 minute-of-angle. This aggregate was fired in the National Championship Matches at St. Louis, Mo. in August 1963. It displaces the former record jointly held by Don McClure and Ed Shilen. Please make this correction in your Records Listing.

LETTER FROM MEMBER

Dear Mr. Teachout:

As I am a new shooter in the sport of Benchrest shooting I want to congratulate Mr. George Wyatt of N. Y. for expressing the way I feel about the game and the NBRSA. I am sure, George, that you said what all the new shooters were thinking and couldn't put on paper.

I guess all our experiences are about the same; you start off by yourself and then one of the old timers see you fighting to win and takes an interest in you and starts you off in the right direction. In my case it is Bill Schellert.

Frank Muriel
Florissant, Mo.

1964 BENCH REST MATCHES

GULF COAST REGION

Abilene, Texas: Texas Championship Matches; May 2, Unrestricted class, May 3, Heavy Varmint class; June 27, Sporter class, June 28, Light Varmint class. Varmint and Sporter Class National Championships, Aug. 7th, 8th and 9t.h Programs and information from J. L. Bonner, Box 606, Cross Plains, Texas.

MID-CONTINENT REGION

Hot Springs, Arkansas: April 5th, Heavy Varmint and Sporter classes, Hot Springs Gun Club, B. J. Maddox, Sec'y, 110 Pinewood, Hot Springs, Arkansas.

Tulsa, Oklahoma: National Championships for Unrestricted Rifles, September 16th, 17th, 18th and 19th. Tulsa Bench Rest Rifle Club, R. G. Berry, Sec'y, Pawnee, Okla.

NORTH CENTRAL REGION

Buffalo, Wyoming: May 3rd, Crow Shoot; luJy 11th and 12th, Mid-Summer Matches; Aug. 30th, Sporter match; Sept. 27th, Hunters match. Buffalo Outdoor Rifle Club, C. C. Hankins, Sec'y, P. O. Box 151, Buffalo, Wyoming.

NORTHWEST REGION

Seattle, Washington: Apr. 4, Flybustin' Shoot, Varmint rifles; May 2, four classes, 100 yds.; June 6 and 7, (reg.) four classes; Aug. 15 and 16, Northwest Championships, four classes. Nov. 22, Turkey Shoot. Puget Sound Benchrest Rifle Club, M. M. Oakley, Sec'y, 7230 So. 116th, Seattle, Wash. 98178.

SOUTHWEST REGION

Yreka, California: May 30 and 31; Memorial Day Shoot, four classes (reg.); Sept. 5 and 6, Third Annual West Coast Championship, four classes (reg.) Yreka Rifle Club, Ray E. Jones, 508 Knapp St., Yreka, California.

(Editor's note: Some of the above shoot schedules are as yet unofficial and may be subject to later revision.)

LETTERS FROM BENCH REST SHOOTERS

Dear Phil:

How often have we heard the expression "separate the men from the boys"? It happens in every competitive game when the difficult stages are reached. That is where the "boys" make mistakes and where the "men" hold steady.

How often have we heard the expression "It wasn't the gun, but the shooter"?

I've probably heard both these expressions oftener than most because despite my 70 plus years I've nearly always been separated with the "boys," and in spite of the fact that my rifle was made by one of the top riflesmiths of the country, I am seldom able to demonstrate its capabilities.

So, maybe as a "boy" shooter I may be heard to declare that I want no part of my good and esteemed friend Ed McNally's proposal to judge aggregate scores by taking the best five out of six targets.

I have had targets disqualified, but it was due to my own fault, and I ask no sympathy or no indulgence.

A target may be disqualified because less than the required number of shots appear in the backer. If Mr. Sweany's excellent retitcle (of the proper caliber) is used to count each bullet hole, and no bullet hole is larger than the ring of the reticle, then there can be no double, and the target is short the required number of shots. The quintillion to one chance of a true double is too remote to justify consideration.

A target may be short the required number of shots for any of three reasons: 1) less than ten shots were fired because (a) the shooter miscounted, or (b) the time limit ran out before the string was complete; 2) cartridge had insufficient load and the bullet failed to reach the target; 3) the rifle malfunctioned and failed to fire, or the extractor failed to extract an empty case or any of a dozen malfunctions prevented timely completion of the string. None of these reasons are any more than reasons. They are not excuses. A good rifle, properly adjusted and carefully inspected will not malfunction. A good shooter will not shoot a record shot on the sighter and fail to replace the cartridge in the proper hole in his cartridge block. A good shooter, not hampered by malfunctions, will not allow time to run out before finishing his string.

Another cause of disqualification is the appearance of a shot on the backing strip, but not on the record target. This rule is impossible of enforcement unless the shot is printed in the margin of the record target. Assuming this to be the case, then we have the following possibilities: 1) The group was started too far off the center of the target; or, 2) the shot was fired in a wind condition too violent not to have been noticed by an alert shooter; or 3) the shot was wide because of a bad bullet. In only the last of these instances is the shooter entitled to any sympathy, and even then to not much. All shooters who may expect to place as "men" in competition check and re-check their bullets, before, during, and after making.

In short, I don't think the "men" will need the help of Ed. McNally's proposal, and I don't think it will do the "boys" much good.

Another thought. If we adopt this, how long before we have unlimited re-entry matches?

Sincerely,
Charles Kingsley

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Dear Phil:

The latest issue of Precision Shooting just came in; a welcome interruption to a jampacked day.

Permit me to put in my two bits worth on Ed McNally's "Best Five" proposal. I've known Ed for years, very much like and respect him, am deeply cognizant of his active and abiding interest in bench shooting. But I can't go along with his proposition.

Bench shooting is unique enough without adding a further uniqueness to its system of adjudging champions and/or National Match aggregate winners. What other sport is there which permits a selection of best performances? The runner doesn't get to go over the hurdles again because he knocked down hurdle #4; the skier who lands on his prat has that run or that jump added into his ultimate score just as if he'd sailed along normally; the auto racer doesn't get a choice of laps because his plugs were fouled for part of the race—and so on and on. The vicissitudes of competition always include strokes of luck and acts of God whether they work for or against the competitor, and every competitor entering expeects to be on just that basis.

If National matches—or others—were to be considered by NBRSA merely as demonstrations of the levels to which rifle accuracy has risen there might be reason for the Best Five type of procedure; but so long as they are designated as matches, as competitions, I see no reason why our scoring procedures should be at variance with those of other sports.

Our practice has long been for the opening match of a day or a yardage to be a non-counter as far as the National Match Course was concerned, in order to give competitors a warmer, a chance to re-zero rifles or rid them of bugs incurred during transit, etc. Sometimes individuals shoot their best groups during the warm-up. So what? Does the high jumper earn a gold medal by 7-foot warmup jumps? And what would be the suggestion had we never employed the opener match and traditionally fired only five—would it then be desirable to take the best four of those five?

Nope, for what it's worth I say stick to the system we have—a warmer, then five for real. And if somebody flubs one or makes the DQ column, that's tough, but it's also part of life in competition.

Warren Page

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To The Editor of Precision Shooting
and The President of NBRSA
Dear Sirs:

I have been a reader of P. S. for several years (thanks to a good friend) and now thanks to my good wife I have my own subscription. Being of Swiss and German descent and evidently inheriting the stubbornness of both, I refuse to believe anything I read or hear, and only about one-half of what I see, as the saying goes. Like when I read that benchrest shooting is just about a thing of the past, and the top shooters don't want any new Joes to bother them, or you have to have at least thirty X to get half minute of angle with a sporter. I read a lot too.

I am little hard of hearing, but some of the stories I hear are real dillies. One fellow has a .270 Win.—very accurate. He can cover his 5 shot group at three hundred yards with a 50¢ piece, every time. Then there's the fellow who shoots his big muley at 827 yards, one shot right through the heart. Killed him too. These fellows are probably telling the truth. Several years ago one of my customers brought in an old pump shotgun and told me the darn thing would go off twice without repeating it. I was pretty busy at the time and told him I would check it over when I got time. I did, and it did! Ever since I have made it a point to listen and no matter how radical the story sounds, I will give the man the benefit of the doubt. When my shootin' buddy shoots a .500 c to c at 200, when I can't find any holes in my target but find them in a target I didn't shoot at and when my nice little black aiming square turns to a gray blob resembling a lopsided balloon floating in the breeze, I'm like the Irishman who saw his first elephant; "Begorra it's a damn lie, there ain't no sich animal."

The real reason I am writing this letter is that about two years ago I got bit by the benchrest bug and I would like to know what qualifications a man needs to join the NBRSA. It doesn't seem logical to me that the association would turn down prospective members, but I have never seen a membership application form. Three of my friends and I attended the July 13th shoot at Iowa Falls (Iowa). This was the first sanctioned shoot for three of us. If the majority of the benchrest shooters are anything like the fellows we met down there, I would sure like to meet many more of them. Those fellows went all out to help us new shooters in every way and very patiently and politely answered our many questions.

If membership is open I wish to join. Two of my shooting friends will also take out membershhip. I have a great desire to sometime attend a regional or national sporter and varmint shoot. In our informal shoots we like to go by the rules of the NBRSA. Where can we get a new rule book?

Ralph H. (Joe Shooter) Yaeger
Fargo, North Dakota

EXPERIMENTS AND EXPERIENCES

By Al Angerman

BULLETS: We'll talk about bullets first because I believe that of all the variables that affect precision, bullets are on top of the list. We now have long, strong, solid, sleeved or otherwise reinforced actions capable of providing the ultimate strength in holding the heavy floating barrel firmly in place. We have beautifully precise barrels by Clyde Hart that are so uniform in bore and groove diameter that the ordinary guy can't find, much less measure, the slightest deviation from perfection. Our stocks are made from carefully aged, laminated wood, and precise inletting avoids errors at the target due to poor bedding. There is even a trend toward elimination of wood and bedding errors by resorting to lightweight metals for the "stock."

Now I don't wish to give the impression that primers, loads, cases, triggers, scopes, mounts etc. are not important but regardless of how precise all these things are, we will not get tight groups without good bullets. Uniformity of jacket wall thickness is known to be important. Unfortunately I still have to pick out the good ones with a wall thickness micrometer because I don't have beautifully precise jacket turning or boring equipment. A recent ad in a scientific journal extolled the virtues of a relatively inexpensive lathe for the fabrication of small precision parts. Unfortunately the wobble in the spindle could not be guaranteed to anything less than .0005", and jackets have to run better than this.

Jackets vary considerably in length, at least the ones I've been using. Anyone wishing to trim them to better uniformity can do so with a Wilson case trimmer. Here's how. Take an empty, deprimed, renecked case; drill through the primer pocket, tap the hole with a convenient thread; and screw in a bolt of sufficient length to reach the shoulder area of the case. This is now your jacket holder. Insert this in the Wilson trimmer case holder, slide a jacket in the case neck until it is stopped by the end of the bolt inside, adjust the trimmer in the usual way and trim the jacket to length. A mild finger squeeze on the jacket will keep it from turning around in the neck while it is being trimmed. Deburr the mouth of the jacket inside and out as you would a case. Jackets which varied as much as .003" in length were trimmed to within .0004" by this technique.

Getting back to finished bullets, I have done considerable experimental shooting with several guns under quiet conditions and conclude the following:—

(a) There is little difference in average group size between bullets made from jackets turned to .0002" wall uniformity and those selected to the same tolerance with a micrometer. The sad part about hand picking them is that one only gets a few hundred good ones out of a box of 1000.

(b) Hand picked or turned jackets will shrink your groups by about .04 to .05 MOA over those used directly from the box with no selection.

(c) Bullets that were made sloppy deliberately didn't shoot worth a damn—they gave five shot groups at 100 yards that averaged 0.45" compared to good ones that averaged under 0.25". By "sloppy" bullets I mean some I made specifically for these tests from non-uniform, rough, pitted, scaly wire, cores not weighed or degreased, jackets not miked, trimmed, weighed or inspected, along with the use of undersize punches that gave excessive extrusion (bleed-by) during seating.

(d) Bullets that have a big wrinkle inside the ogive occasionally though not always give a flyer, but they weren't anywhere as bad as I thought they would be. Incidentally, a #15 or #16 crocheting needle from the dime store makes an excellent tool for probing the inside of bullet ogives. Big wrinkles are detected easily with little practice by rotating the bullet slowly over the little hook of the needle. Sometimes there's a big wrinkle on the inside which is not always visible as a deep crevice on the outside.

I recently spent over a month making a hundred so called "perfect" bullets. That is just about as persnickity as one can get. Jackets were doubly checked for wall uniformity, weighed to the nearest .01 grain, trimmed to within .0005" in length, inspected inside for cleanliness, deburred etc. Wire was selected for the ultimate in freedom from surface imperfections, and cores were triply swaged, examined individually and segregated by weight to the nearest .01 grain. These will no doubt be the best my dies are able to produce, and I'll report later on how much better they shot, if any, than run of the mill bullets that I use regularly in competition.

CORES: Much has been written about jackets and jacket uniformity in recent years, but little is ever said about cores. We make them as neatly as possible, they end up looking OK, so we use them without question. Lead is much heavier than copper, and therefore any tiny imperfection of the core will have a correspondingly greater influence on bullet stability than a similar sized imperfection in or on the jacket. The other evening I cut some beautifully smooth pieces of wire and then deliberately dented, filed, squeezed, cut, galled, pitted, bruised, scratched, rasped and otherwise mutilated

(Continued on Page Twelve)

Experiments and Experiences

(Continued from Page Eleven)

them, then tried to swage out those imperfections. Under no circumstances did one, two or even three swages "iron" out the defects entirely. There were always signs of the original marks left. The point here is to use clean, smooth, squarely cut wire slugs in the first place. Most of us use 3/16" wire for 22 cal. cores. I think that wire closer to 0.2" would be better.

We hear that some of the record breaking bench rest shooters use or have used 50:50 solder for cores. This solder composition has just about the same density as copper, and therefore bullet unbalance due to non uniformity of jacket wall thickness is eliminated. Unfortunately, 50:50 solder has a Brinell Hardness of 14.5 compared to lead at 4, which makes solder tough to handle in ordinary dies. Since I had to wait so long for my set of B&A dies, I am a little reluctant to rush headlong into this proposition without positive assurance from at least a half dozen reliable sources that I will not ruin, stretch or bust them. Maybe those who have had experience with solder cores will take pen in hand and pass on the benefit of their fortunes and misfortunes to us.

POWDER: This is a component that we as individual handloaders have little or no control over, and if there are any built in variables from charge to charge we don't know about them and happily use lot after lot on faith that it is good. The standing humorous comment among bench shooters is that if one is not doing well it's because he failed to mike each powder pellet for uniformity of length and diameter, and did not ream out the hole before coming to the matches!

The most time consuming chore that I have before a match is that of weighing up my powder charges into little screw capped vials. I have repeatedly tried to convince myself that thrown charges are as good. Any number of the very best shooters do not weigh their charges, and this in itself ought to be sufficient evidence. But somehow I just can't get myself to believe that a variation of plus or minus 0.1 grain is OK. If you're shooting any one of the .222's, the 0.2 grain spread is about a 1% variation in charge. Moreover, I can't trust myself enough to use a measure properly for several hundred rounds without fouling things up but good.

Several months ago I fired two five-shot groups with .222 Mag. loads starting at 14 grains of 4198 and in one grain increments up to 23 grains (20 groups total). All charges were weighed, and the same primers and 50 grain bullets used for all groups.

Here are the impact data:—

Grains 4198	Impact below point of aim
14	3.0"
15	2.3"
16	1.6"
17	1.4"
18	1.3"
19	1.1"
20	0.9"
21	0.6"
22	0.3"
23	0.1"

These results show that a one grain change in powder charge in a .222 Rem. Magnum will change the vertical point of impact by about 0.2 inch. I'd guess the results would be about the same for the other 222's or the Don. Doesn't it follow that thrown charges that vary as much as 0.2 grain will enlarge the group by 0.2 x 0.2/1=.04"? This is too much of a possible error for me to ignore, and so I go on merrily weighing all of my charges to the gnat's hair.

PRIMERS: These little dudes are another component that we have little or no control over. How do we know we aren't limited right now by primers? What makes us think that primers are perfect and all else is at fault? Weighing them doesn't help, nor does just looking at them. We can't pick out the bad apples. There's no way of knowing in advance which one will turn out to be a lemon, or enough of a lemon to give us that key shot. There's bound to be a rotten one in the batch once in a while. The diameter uniformity of most primers is pretty good and they seat with about the right amount of friction. Their height, however, varies too much compared to the pocket depth we try to ram them into. But this can be corrected if we pick primers of uniform height, don't flatten them when seating and bore all the primer pockets to uniform depth.

I did a little monkeying around with primers just to see what would make them perform erratically. Of all things, getting oil, water or powder solvent on them is positively the worst. For this business I injected minute measured amounts of various oils, solvents, grease and water directly under the little paper disc beneath the anvil, allowed the primer to "soak" for 15 to 30 minutes, then tried to fire it in an unloaded case. It was really tough to measure the tiny bit of oil or solvent that would cause a primer to malfunction. I used special measuring equipment and found that .005 cubic centimeter (about one tenth of a drop) of any oil, grease or solvent would kill a primer every time, while as little as .001 to .002 cc. would either cause the primer to make a sickly weak noise, misfire badly or not fire at all. Sometimes I wonder how much variation we get in ignition due to handling of primers with dirty, oily fingers!

AIMING ERROR: Our scopes are either fitted with fine cross hairs or with dot reticules. The reticules of all scopes I've ever looked through on heavy bench guns were less than ¼ MOA, and I'd be willing to bet that most were ⅛ MOA or less. My 1/16 MOA dot will hold on a fly's head at 100 yards, but where is there an equally small spot on our present targets? Trying to center a 1/16 MOA dot in a half inch ten ring or a half inch square aiming area leads to a lot of error in judging equal distances vertically and horizontally.

Even if we had a neat little ⅛" white aiming square or a ⅛" diameter white circle framed in black we'd still have appreciable error. A 1/16 MOA reticule in a 24X scope will hold inside these white areas if the light is good and there is little or no mirage. But human eyes are not built to define contrasting objects by any more than about one minute of angle. Accordingly, since the scope is 24X, the error will be about 1/24 or .04" at 100 yards. Under the very best conditions of light this error might be a little under this because it will be possible to judge the center by sensing light intensity differences around the black reticule.

Our present targets, however, do not have neat little contrasting areas to hold a tiny reticule on, and therefore our errors are potentially much larger. Back when bench rest shooting first got started, a half minute of angle aiming square and a half minute of angle ten ring were probably OK, but these days when we're scratching for every fraction of an inch, a large aiming error due to a somewhat obsolete target design is something we ought to be able to correct easily. Maybe we can add a ⅛" white circle with a 1/16" black ring somewhere on our targets for use when the conditions are good. I'm no physicist, and so will be more than happy to listen to a physicist-bench shooter who has a more brilliant suggestion to offer.

MATCH ATTENDANCE: If everybody keeps going around telling everyone else, including prospective new shooters, that bench rest is tapering off and that attendance is going downward, pretty soon we'll all believe it, shoot out our barrels and take up knitting or number painting. Let's quit talking negatively and start expending some of our wind in recruiting good, new shooters. George Wyatt's letter in the December issue of PS was a beautifully written essay that clearly defined the spirit, intent and aims of bench rest shooting. Moreover, he listed some of the qualifications a man must have to be regarded as a serious bench nut. While George may not be a mechanic, machinist, mathematician, physicist or chemist, he is a damn fine writer in my opinion and an excellent salesman for our game. I agree with him that we are not looking for an annual increase in half-hearted mildly interested members who would rather just sit around and talk small groups instead of shooting them. Just so the attendance stays reasonably constant—recruiting good new serious shooters to replace those that retire, move away, turn in their chips or otherwise have to quit. Back in February 1961 issue of PS, page 11, I listed the total number of entries in all the shoots reported for each year since 1955. Bringing this up to date we get:

1955— 813	1960—1056
1956—1072	1961—1069
1957—1116	1962—1154
1958—1060	1963—1510
1959-1014	

I make no claims that these figures are exact, because all I did was add up the total number of entries of all the shoots reported in the magazine. Our secretary no doubt could give us a better summary. In any event I'm having a little trouble seeing where bench rest attendance throughout the country as a whole is going anywhere but upward. The up swing in recent years is due to our varmint rifle program. The heavy unlimited attendance seems like it is standing still, and I'll have to agree with Mr. Stuhlshuter that what we have most to worry about is the possibility that clubs may find it no longer profitable to put on a heavy gun shoot.

While it sounds like I'm blowing my stack I'm really not. All I'm trying to do is quiet down some of the negative thinking propaganda. Let's quit bickering and start shooting. All we need is a few more Oswalds and we can sit back and look at our rifles collecting dust on the shelf. We have just as broad a bench program as any man could want. Let's not look down our noses at the other guy. If he wants to come to shoot with a 200 pound gun and a 60X scope, let him come. If he wants to come up to the line with a spindly sporter, let him come. Heaven only knows it is later than we think. The odor of burning powder mixed with the sweet aroma of Hoppes is the same from either gun and I for one will welcome any safe, sober shooter who is interested in any of our classes regardless of whether or not he brings a barrel mounted on a steel girder or a modest as is job off the shelf.

Having now expounded violently on how serious an interest we must have, I am reminded that all work and no play makes bench shooters very dull boys. Therefore I kind of miss the occasional "specialty" matches that the clubs used to put on just for fun. I know that as such they add little toward getting the perfect one holer, but they are relaxing after a grueling day of trying to outguess the conditions, and everyone seemed to get a boot out of them. Examples:

(1) One shot closest to center.

(2) Five shots, one closest to center and one each in the corners without going outside the border.

(3) Twenty shots at 200 yards with the specific object of beating the 0.776" group alleged to have been fired by a fellow named Rowland way back in 1906.

(4) Five or ten shots at a 100 or 200 yard target that has had its ten ring punched out, object being not to hit the paper.

(5) Special "break the record" matches whenever the conditions are particularly quiet.

(6) Bust a few flies. Last fall I tried hitting the flies on Crawf Hollidge's targets with my best varmint rifle and never did get a perfect target.

TIPS: (a) Bullet cores are better if you swage down by one or more grains per swage. They're even better if you double swage at least one grain downward each time for a total of at least two grains, and they're best if you triple swage them with at least one grain loss per swage.

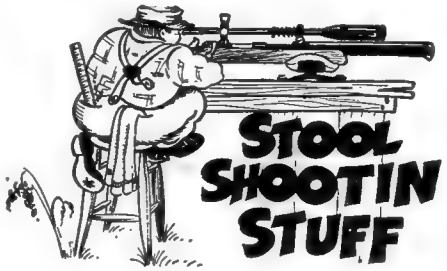
(b) You can lap your chamber free of fouling, grit, powder residue and other dirt without taking your rifle apart. Take an empty fired case, tap the head end with an appropriate thread, and fasten it to the end of your cleaning rod. Smear a fine cleaner such as JB on the case and rotate it around in the chamber by means of the rod. Clean the chamber out with patches.

(c) An ordinary five and dime store cup cake baking tin serves as a neat series of bins to store weighed bullets, cores or jackets. If you drill a hole in the bottom of each cup you can wash cores with hot detergent, hot water, gasoline or carbon tetrachloride without rattling, shaking, marring or otherwise disturbing them.

(d) You can make a neat protective scabbard for your cleaning rods by cutting a six foot length of ¼" O. D. "Do-It-Yourself" aluminum tubing in half, plugging one end of each tube with a cork and clamping the two tubes together with two hose clamps. Cleaning rods slide in easily and are protected against damage and bending during transport to the matches.

(e) Ever need a powder funnel with a spout that would fit inside the neck of a 22 cal. case? Make one. Take any convenient 22 cal. centerfire case, generously grease up its neck and slowly raise it up into your core forming die. This will reneck the case to about 0.2" O. D. Cut the case in half, deburr the edge and firmly ram a little plastic funnel from the dime store down into it.

(f) You can make a neat junk caddy for patches, Hoppes, small bottles, pencils, brushes, cleaning rod tips, tools etc. by drilling appropriate sized holes in a ¾" thick piece of mahogany which you then fasten to a similar sized, solid piece below.



Dear Phil:

You will undoubtedly be printing reports from the various officers of the Eastern Region about the discussions and decisions made at the Winter Meeting of that region in Elmira. Any expressions that I may make in this column are merely those of an attending member. There were some

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discussions that were really important but not too conclusive. That condition isn't exactly new to the Winter Meeting as, as long as I can remember, the subjects brought up usually had exponents from two different camps. That is a very proper situation because if the subject was so clearly understood that it needed little discussion or was not viewed from two directions, there would be little reason to bring the matter up and for the Directors to allocate considerable time for its discussion. Indeed, this is the purpose for which the winter meeting is held; namely, to find out what the opinions of the members are, pertaining to various subjects and thus guide the Directors so that a later meeting of the National Association can be alerted to the thinking of the members who attend that meeting, along with what other opinions the Directors may gather throughout the shooting season.

The attendance was greater this year than it has been for some time and some members who could not attend in person made it a point to reduce some of their opinions to writing and so advise the Directors. I am sure the Directors appreciate letters written in to them, especially when a writer can put down clearly the reasons for his opinion and refrain from a lot of variations in the main subject of the letter which can do nothing but cloud the issue and make the interpretation of the writer's wishes and ideas less understandable. We are now very fortunate in the organization in having Directors who in most cases are experienced and outstanding shooters who have the moral characteristics that lead them to do what the shooters wish rather than what they wish as individuals. Perhaps this has not always been so in the past but I think there are few readers who will not recognize the admirable attitude of those who are now our leaders.

The subject matter which consumed the greatest amount of time and evoked an expression of opinion from almost everybody there and, when the vote was taken, showed that the group was almost evenly split pertained to the five out of six match system for determining the daily aggregate in the National Matches. The proponents of each side were, during the meeting on the first day, inclined to be adamant about their views. The adoption of this system, as I said before, if approved, was to be first used at the National Matches, where the disqualification perhaps too freqently has penalized a contestant who may have traveled several thousand miles to attend a shoot. To be sure, the distance traveled has nothing to do with it because a local club member might hurt just as deeply, due to disqualification. Neither does the standing of the competitor play an important part in this suggested rule change because everyone in the event would have an opportunity to choose his best five targets for determining the aggregate and the final standing It should be borne in mind, however, that World Aggregate records would only be established when the aggregate was made in the five consecutive targets of Matches two through six. I have listened quite calmly to arguments on both sides for more than a year and I can see strong features in both angles and I particularly would not like the game to approach the re-entry type but I think I am swayed most by a feeling within myself that does not let me take pleasure in winning any event where one or more of my competitors may have suffered ill luck while I enjoyed onrmal or good luck.

Shooting is not an exact science. There are certain rules that one must follow but there are few instances where Lady Luck may not step in and nullify our very best efforts. There are few of us who would deny that the shooting conditions or weather do not have a profound effect upon our groups or that a bench location or the steadiness thereof does not have, on some occasions, a very adverse effect on our efforts. These conditions are so capricious that nobody can be sure that they would average out at any important shooting event. I concede that the better shooters survive these handicaps better because of their prowess; however, if everybody has the opportunity to discard only one match among six, uniform treatment will be accorded to all and the resulting aggregate be a more accurate estimate of the shooter's ability as well as the accuracy of his weapon and the worth of his components.

Actually the harsh disqualification penalties which were forced into the game have, in my opinion, handicapped its growth. It has made heart aches and upset ulcers for those who have stayed with the game. The great fondness which many of us have for this sport makes us absorb these aches and ulcer pangs. In some instances, it teaches us a lesson which nothing else could do but our game has not grown as it should and I think it is time we experimented a little in a few different directions. Looking back through the years, I remember the one shot matches, and the three shot groups which phased out to a series of matches in which five shots were used. Hardly had we reached the five shot stage when a great hullabaloo arose which contended that a five shot group that won a match was a lucky one and the real test of good shooting could only come about if we shot ten shot matches. At the time of this rule change, the very great majority of the shooters were willing to put money into a kitty which was distributed by various percentages to the winners of the matches through perhaps one to five places in some events. This system provided spice and interest in the game and achieved an efficient and pleasant method for redistributing the self contributed prize money. This practice phased out to some extent in proportion to the rate at which we lost shooters. The adoption of the ten shot targets was not the only reason for losing shooters by any means nor do I propose our going back to five shot targets for matches where heavier barrels can be used. The guiding hands of any sports activity must steer it some. The question is which direction to steer it to keep it on its feet and bring in to it sufficient new blood for a healthy growth.

By doubling the distance between the long holes in golf, the long ball hitter would be greatly favored. I understand that some years ago, baseballs were developed which would make home runs very much more routine and the infield fly balls almost a thing of the past but would that be good for baseball. The guiding hands thought not. It goes without saying that as an organized participator sport, golf outnumbers all others (fishing outnumbers golf but it is not organized).

George Wyatt wrote in a recent issue, how far do we want to dilute our game. Not to the extent of golf, possibly, but again I point out that if our participants were more numerous and the sport of shooting more understood and respected, we would not now be faced with the horrible walls of anti gun legislation. We must have fumbled the ball too frequently in the past and now the time is too short to allow frequent fumbling.

There is a difference between fumbling the ball and the establishing of new rules which will make bench rest shooting more attractive and I'll admit there are fewer examples of the former and some increase in the frequency of the latter. I just don't want to see all of the rules that are made favor the long ball hitter nor do I like to see the accent so strongly favor guns that so far outclass the shooter that the human element becomes very secondary. Here's where I worry about varmint rifles and sporter rifles being referred to as such by name but being designed so that the gun becomes a paper punching machine whose sole purpose is to win matches.

The desire to gamble is a very strong trait in human nature, particularly among Americans. He loves a game where he has a chance to win. He prefers an even break and does not like gambling machines or card games in which the odds are stacked against him to an unreasonable extent. I, therefore, plead for some long holes and some short holes on the course of bench rest shooting and I sincerely hope that the classes for rifles will not be snafued to the extent of fostering special purpose rifles and rules which would discourage many who are anxious to enter our game.

We are perhaps the greatest exponents of reloading, the most frequent purchasers of precise equipment, the sponsors of new and better techniques. Let's retain our leadership and make our efforts count for a more enjoyable pastime and a re-affirmed right to bear arms. The time for unstinted effort was never needed greater than now.

The stupid legislation which is being proposed is appalling. In my own State, there are some thirty five pending bills, most of which come under this uncomplimentary category. I am sure it is a serious problem in your State also. Can you imagine, for instance, such a distasteful and unworkable system as to take from every non-police connected person, firearms of every type to be stored in the nearest armory. When the owner wishes to use them, he must go down and borrow them back again for the period of his hunt or target practice and then return them. This is a proposed bit of legislation which this week I felt compelled to oppose before our State legislative body. Can you imagine the bureaucracy that would be established to take care of these arms, and the paper work that soon would be so confused that the criminals or a possible foreign invader would be the only ones to benefit.

I noticed that Al Walters added his bit by saying in his column that whether these problems arise in the legislature, news media or over the air, we should jump on them with both feet. He is certainly right. It is keeping some of us who are possessed with fortitude and energy enough to do it as busy as a jumping Frenchman in a Canadian brawl. For instance, a local paper came out reprinting a letter from an Air Force sergeant suggesting all guns of all types be done away with except for those carried by the military or police. His contention was that no guns could be stolen or obtained illegally if there were no guns. He makes the problem sound very simple but how he ever got to be a TSGT is more than I will ever know. I am pretty fond of the Air Force which has had a great deal of influence in my life. I hope the slogan which was used in my command "The difficult we do immediately, the impossible takes a little longer" has not so influenced airmen that they come up with many ideas as whacky as this. It is said that there are fifty million gun owners in our country and perhaps a total as large as two hundred million guns. If these owners would but get together and straighten some of these lawmakers out, our right to have these guns would not continually be in jeopardy. It is unfortunate that it is the minority and the crackpot that are so vocal and the news media deos not recognize the wheat from the chaff.

Well, Phil, I have devoted quite a lot of space to some serious matter but have not yet covered the fun we had at Elmira. After the deep discussions we had on Saturday afternoon pertaining to barrel weights, lengths and sizes, we broke up for a very pleasant cocktail hour provided by the hotel management. The ladies joined us and you can guess it—the discussions did not immediately cease but they tapered off to a period of mellowness and good fellow-

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ship. We then went in to dinner in the main dining room and although we all couldn't sit together, we were close enough to feel that we were at a private party.

As we finished in the dining room, we drifted up to Room 732 where Bruno, Zig and Ed Seymour carried on in their traditional manner of open and cordial hospitality. To an extent it was a re-run of what had occurred on Friday night except that on the former occasion, we were not graced with the female contingent. This means that on Saturday night, we do talk occasionally about something else but guns.

Along about ten o'clock, there was a popular demand upon Ed Seymour to concoct his famous champagne cocktail. The idea wasn't hard to sell to Ed but it was a little more difficult to convert it to action; however in due course of time, all of the ingredients were assembled except for the champagne glasses. Ed is a pretty rugged guy as many of you folks will recall and his experience in the far corners of the world have enabled him to clearly express whether he is for or against. I wish you folks could have been there and heard him when the hotel management called up and told him there would be a charge of 25¢ for the use of each champagne glass. We would have much preferred to have had one of the trophy bowls for a loving cup but since there wasn't one available, it was decided the champagne would taste just as well out of regular tumblers.

There has been many a comment about the hand being quicker than the eye and there have been many odd occurrences happen and perhaps the following was but skill in marksmanship which we might expect in a bunch of experts in that line. As is customary, the champagne bottles were tightly corked with the appropriate high pressure load in the chamber. A two man effort was called for and the assistant champagne

caused the walls of the jacket to flow upward and become progressively thinner until the shattering effect of a fracture occurred. Almost invariably around the full diameter of the jacket but only occurring when a very tight core seating punch is used, and when no bleed by exists. We don't want the jacket to be thinned out at this point and therefore we must be very careful to see that the punches seating the cores fit exactly right with no longitudinal stretch existing. The .705 Sierra jackets come to us pretty close to .705 in length and .222 in diameter. At the core seating stage we flatten the dome shaped base and we stretch out the outer walls of the jacket from the lead line down to .2239. A typical example of the new length would be .692 and the diameter would correspond to that of your core seating die with perhaps a tendency for the greatest diametrical dimension to be immediately below the lead line.

When we put this jacket with its seated core into a good smooth die and in the following instance, I refer to one which is a Tungsten carbide which makes a 7S bullet with a fine open point, we come out with a jacket or bullet length that has now come back out to pretty close to the length of the original jacket as it came from Sierra. This, I think, is a little too long and indicates that the jacket has been stretched a little thin at the start of the ogive and because it is bound to be thinner at one place than another, we have offset the careful effort that we put in to selecting jackets or modifying them so that they will have uniform wall thickness. A more desirable bullet, in my opinion is one that stretches, but not too much this longitudinal dimension. My choice is about .703 for the finished length of the bullet. Bear in mind that this is a 7S die and I am bringing it to .2240 at the bearing surfaces of the bullet. You can see that the expanding up theory follows through at this stage and that there is spring back occurring from the ogive toward the base.

Many years ago when bullet making dies were very scarce, we used to hear of soft swaged bullets and the EU theory was not developed. I remember an old shooter who made his bullets up to about the period of the cadmium plated flair. Before seating his bullet in the case at the line, he held it up to his ear and shook it to see if the core rattled. If he could hear it rattle, it was rejected. It was as simple as that but he won lots of matches because at that stage, preforming of cores was not common and a grain or two variation in weight was not uncommon. There was much talk then of the core floating around inside of the jacket as though the inside of the jacket was as smooth as the outside.

We lay great stress upon the bullet which has a smooth finish and inconspicuous longitudinal wrinkles whereas the important thing is to see that the wrinkles do exist; however they must be uniform around the jacket at the ogive point, indicating a smooth die perfectly concentric in shape and the proper use of lubricant throughout the processing stages. Usually, the smoother the bullet is on the outside, the deeper the folds are on the inside of the jacket at the ogive point.

Just take your favorite bullet, dissolve it in an acid that cuts the copper but not the lead and examine the core. (You'll disturb the dimensions of the core a little, perhaps, but avoid the use of a somewhat dangerous acid by filing off the base of the bullet and stripping off the jacket.) It is probable that the ten thousandths of an inch dimension which you worried so much about as a variation of the wall thickness just below the mouth of your jacket has paled into insignificance as you look at those crease marks on your cores. If you had indicated the thinner part of your jacket before inserting it in the die, you will prob-

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Stool Shootin Stuff

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dispenser, Bill Kappel, was as tightly holding the bottle as a professional end clutches a forward pass. Ed Seymour was wobbling the cork back and forth when suddenly there was a loud pop as conspicuous to those in the room as the firing of a .308 cartridge before the range officer calls "Commence fire." On the opposite side of the room, flanked by a couple of the fair sex, sat George Kelbly in deep conversation, on a divan meant to hold three but which was then holding seven. I am sure the conditions were so crowded that George couldn't have dodged if he wished to and I'm not even sure that George saw the cork projectile approaching. It was too fast for me to keep track of from the other end of the room but I'm sure I laughed heartily as did twenty five others when the next view they had was of the cork stopper protruding from George's pursed lips.

Phil, I think your bullet making article fills a need. I can't agree with everything you say which is quite natural since my experiences would be a little different from yours. One of the points is that I don't consider lead to be a completely inert metal nor do I agree with you that the expanding up theory ceases to apply with the forming of the point of the bullet. This is one of the places where the better quality and better finished dies begin to pay dividends because they carry through the EU principle to the final forming of the bullet. This is most evident in a finely polished Tungsten carbide die. Many people do not recognize that the jacket changes dimensions longitudinally as well as diametrically. It is pretty hard to set up the dies for bullet making without taking a number of different measurements with a micrometer because it is only upon careful measurement that we determine that the dies are performing their proper functions and that the jackets are responding as they should to make the best bullets.

You don't get far with experimenting before you discover that a jacket can be so stretched in the core seating stage that it will fracture at a point about one third down the jacket from the lead line. The jacket will part in this fracture perhaps as much as 1/16" or ⅛" (depending upon the size and weight of the bullet being made) leaving the two parts of the jacket connected only by the too tightly compressed core. The churning effect of the lead in this core at the time of the compression stroke had

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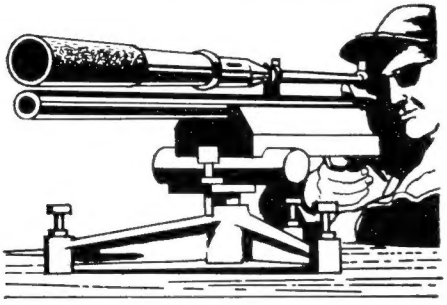

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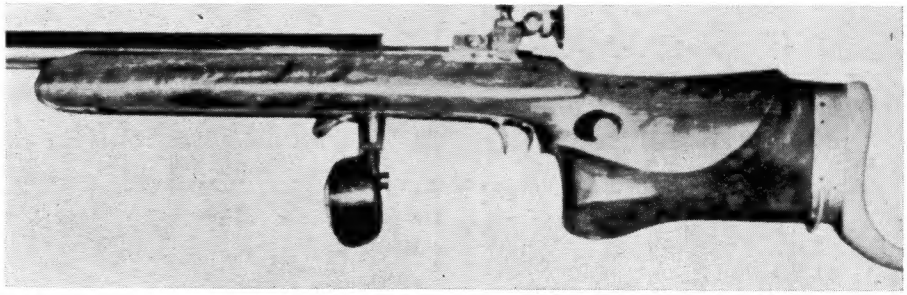

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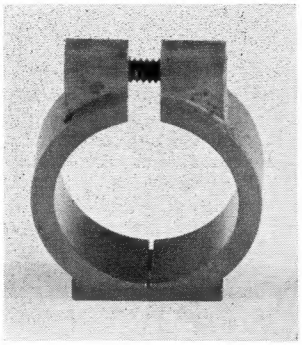

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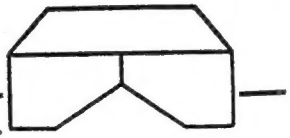

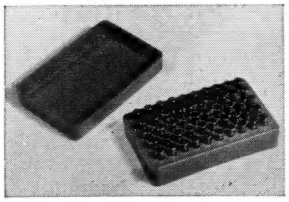

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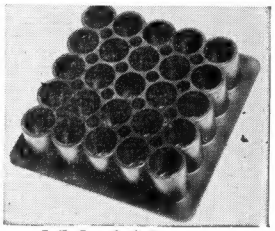

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Stool Shootin Stuff

(Continued from Page Sixteen)

ably find that the first creases to occur at the ogive point were deeper and started at that thinner area and thus a mechanical function as a result of compression compensated for the thin place in the wall. Of course, further down on the bullet, the thinner place was made still thinner as the jacket progressed from its delivered diameter through the core seating stages to the bullet swaging stage and the error was further compounded because of the fact that the thicker area at the base of the bullet moved further out of balance each itme the diametrical dimension of the jacket changed. We would be making better bullets if we could get jackets closer to our desired bullet size. I would love to see them come through at .2238 instead of .222.

Phil, I know it was just a typographical error or mistake some place that caused "Crawf" Hollidge's World's Record sporter group at 200 yards to increase 1/5" in the recent listing in Precision Shooting. The proper dimension for that group is .372 and Merrie Stuhlschuter won't be happy until that correction is made.

Cordially yours,

Ernest Stuhlschuter

Ernest Stuhlschuter

FUN WITH THE CARBINE

By Ted Smith

Dear Phil:

When the notice came out in the Rifleman about the little 30 carbines being available I sat right down and sent off an air mail letter and thus got in on the early issue. Up until this time I wouldn't have given one of them room in my gun cabinette but I just couldn't resist what seemed like a good buy. I have since received my issue, I've played with it a lot and please don't tell any of my friends but I love the little gadget.

The first time I fired it I took it out, aimed it in the general direction of a clay bank and closed both eyes, jerked the trigger, threw my shoulder into it to take the recoil. I opened my eyes, looked all around, shook my head and smiled and proceeded to try it again. After four or five rounds I got up enough courage to open one eye and the more I shot it the better I enjoyed it.

Charley Pierson over in Sidney, Nebraska had been doing quite a bit of experimenting with the carbine and had earlier ordered a set of bullet swage dies for a special bullet he had designed. He wanted to make up a light pill for varmint work and we finally ended up with an 87 grain bullet. As soon as I got my rifle I dug out the reamers and made myself up a set of these dies and started experimenting with this bullet. Charley really had done a good job on the design and this little bullet leaves nothing to be desired for the carbine. I make mine up in a hollow point and the lead tip makes it really explosive. To date the worst varmint I have been able to find is a big bad old tin can full of water. It's so darn much fun that the wife has been accusing me of stealing the fruit juice cans before they are empty.

Recoil in this little rifle is so light you almost feel like you're shooting a twenty-two rim fire. I wish I could state that accuracy put it in a bench rest class but it doesn't quite do this. I tried mine out on a running digger squirrel the other day and while I didn't hit him, I raised so much dust around him he couldn't see where he was going.

I experimented with several different powders. I ended up with 17 grains of H110 behind the 87 gr. slug. My chronograph showed about 2250 fps which was up considerable over the GI ammo I tried. It is a rather difficult rifle to experiment with in that it is hard to determine when maximum pressures are being reached. With my bolt action rifles I always look for hard extraction, blown primers, powder burns, sightlessness and so forth. Probably some of you readers will suggest a method of telling when to stop putting powder in the 30 carbine case before some of us blow our heads off trying to make a 300 Mag. out of it.

In the event that any of the readers want some of these little 87 grain bullets for experimenting I will furnish them for three fifty per hundred, post paid to you but they're handmade so I hope everyone doesn't get the idea at once. Just write Ted Smith, Box 250, North Bend, Oregon.

NEW AVTRON CHRONOGRAPH

The new Avtron Model T333A counter chronograph is the improved, transistorized version of the original Avtron chronograph which was introduced in 1960.

The new chronograph feature a built-in screen tester, which shows continuity of both screen circuits by means of indicator lights on the front panel, thereby eliminating wasted shots due to defective screens or poor connections.

The T333A can operate on two self-contained 6 volt lantern batteries or can utilize a 12 volt auto battery for power. Power consumption is low because transistors have replaced tubes.

Specifications for the T333A are: Velocity range 100 to 5,000 fps. Accuracy plus or minus 0.00001 second. Size 7¼" high X 12½" X 13" (includes carrying handle). Weight, 13½ lbs. including batteries.

Mr. Dwain Fritz, Avtron President, writes: "I think that the user will find the new version even better than the old T333, that used tubes, since we have been conducting a long reliability program on it before releasing it. In addition, the built-in screen test device, and the complete portability offered by the use of the lantern battery power should make it more useful on any range, and especially on outdoor ranges."

TRADIN' POST

Classified type ads; no display. **Rates:** — 10¢ per word per insertion, prepaid. Minimum charge $1.00. Closing date for ads is the last Saturday of the month preceding publication.

Groups of figures, abbreviations and initials count as words. Hyphenated word counts as two words. Name and address of advertiser is counted. Use full words instead of initials and abbreviations and make your meaning entirely clear — get your money's worth.

WANTED: PRODUCT. Reilly Machine Works, 445 Western Avenue, Albany, New York.

CARTRIDGES FOR COLLECTORS: 40 page illustrated catalog #3, 50 cents. Over 2,000 items. James Tillinghast, Box 535, Marlow, New Hampshire.

FOR SALE: Set B&A bullet making dies complete, in 6mm. Like new. Stan Weatherley, 125 Lyndhurst Ave., Toronto 4, Ont. Canada.

FOR SALE OR TRADE: 6.5 mm Free Rifle, 722 action, fired 300 times. **250 Donaldson** Bull Pup, fired 200 times. **219 Donaldson** Heavy Bench Rest, my own action, solid throughout, Hart barrel, fired 300 times. **222 Heavy Bench Rest,** Remington action, Hart barrel, test fired 100 times. Receptive to any offer made on Satiisfaction guaranteed basis. Interested in a 243 or 222 Sporter. Harvey J. Shaw, 121½ West Kemp Ave., Watertown, South Dakota.

NEW AND IMPROVED PRODUCTS

The number of new products, new models, plus improvements and refinements to older models being introduced in the firearms, accessory and related fields in 1964 seems to indicate that the competition in this field is getting keener. Further, it appears that the manufacturers judge the market to be well worth competing for.

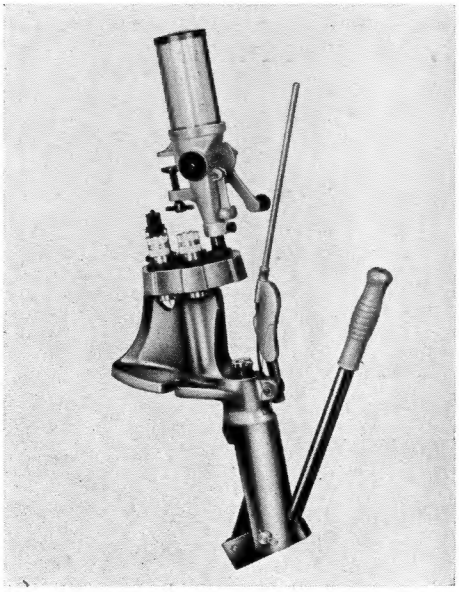
The competition seems to be mainly based on quality and usefulness rather than price cutting. But the competition does tend to stabilize the price structure in similar lines.

This apparent tendency should be good for the shooters and the shooting sports as well as the manufacturers and distributors and result in a healthy market.

PHT

LYMAN "SPAR-T" RELOADING PRESS

The new Lyman SPAR-T reloading press is a rugged, six station turret head press with cast steel "C" type frame. The turret head is just over 4 inches in diameter (about as small as it could be and accommodate the six holes for ⅞—14 dies) and is 1 inch thick. It has a 1¾ inch bearing on top of the frame and a ¾ inch arbor threaded for the hold-down nut. There is positive and accurate indexing of the work stations with an audible "click" and a definite "feel." A projecting stud from the frame rises just under the rear rim of the turret head. In normal operation the bottom of the turret head just clears this stud but the turret head may be tightened down so that its rear rim rests firmly on the stud for support in single stage, heavy duty swaging. The ram with quick-change shell holder head, linkage and operating handle are identtical with those used in the single-stage Spartan press and several other C type presses.



The Lyman "SPAR-T" loading press.

With the Lyman 55 powder measure, with threaded drop tube, mounted on the turret head, all reloading operations may be performed without removing a cartridge from the shell holder. From the testing I have done I found this "progressive" system of reloading to work OK but, in my own case, I would have to have a lot more practice to develop a smooth routine of operation to gain production speed. Being somewhat of a dumb-cluck, and never having used a press-mounted powder measure before, I still occasionally forget to raise a cartridge up to the drop tube and dump a charge of powder on the floor. That of course is no fault of the tool or the system of loading—just my own bumbling.

I personally **am not** a uniform powder measurer with any measure so do not trust the accuracy of charges I throw. From what test shooting I have done with ammo loaded by this "progressive" system, I am convinced that I can thus load rifle ammunition quite accurate enough for informal target shooting and normal hunting purposes. But for serious target shooting and long range varmint hunting I shall personally prefer to stick to my slower, stage by stage with frequent inspection between stages system of reloading. A more uniform powder measurer than I am could no doubt load more accurate ammunition by the "progressive" system than I feel that I can.

The SPAR-T press alone retails for $29.50. The SPAR-T set, complete with all accessories necessary to load one caliber, retails for $49.95.

An additional, optional, accessory is an automatic primer feed. I have never tried to use one of these accessories before. After quite considerable time spent trying to use the sample I have, I was unable to get reliable feeding and was unhappy with the results I got from it. **HOWEVER,** please remember that this was just one sample, tested by one person unfamiliar with its use, and may not be truly indicative of the worth of the accessory.

The SPAR-T press turret could be kept set up for two rifle calibers, with powder measure, or one rifle caliber, three die set for one pistol caliber and measure, and be conveniently in readiness for such loading.

The priming arm is supplied with the necessary accessories for use of large or small, flat or round head primers. Additional shell holder heads for different cartridge case head sizes are only $2.50 each.

In my estimation, this SPAR-T outfit is practical, reliable, convenient to use and versatile in the jobs it may be adapted for.

P. H. T.

DOUGLAS BARRELS

ULTRARIFLED For The Ultimate In Rifle Precision

The quality of **DOUGLAS** barrels has been proven many times on the target and in the field, both big game and varmint shooting. These barrels hold many records on the target, in bench rest, big bore, and small bore target work. We receive new reports all the time, attesting to their excellence, from the target shooter and hunter. We feel that we are making the finest production made rifle barrel available in the world today. Further, our wide range of sizes and weights, variety of calibers, deliveries, prices and discounts to gunsmiths, add up to a service that is not available from any other barrel maker in the land.

CUT-RIFLED MUZZLE LOADING BARRELS

These barrels which we feel to be as fine as any barrel available today, are made from octagon shaped steel with a smooth cold rolled finish. The material used is a carbon manganese steel of gun barrel quality. All barrels are long enough to finish at 42". They are rifled with 8 lands and grooves and a standard twist of one turn in 48". They are available in the following sizes and calibers: 13/16", ⅞", and 15/16" across the flats in 32, 36, 40, and 45 caliber. 1" and 1⅛" across the flats are available in 32, 36, 40, 45, and 50 caliber. All the above barrels are priced at only $27.50 each. Also available in all listed calibers—1½" at $32.50. All barrels are supplied with the breech threaded suitable for the caliber involved.

Slower Twist of Rifling Available, Slower Delivery.

WRITE FOR FREE LITERATURE ON ALL DOUGLAS PRODUCTS AND SERVICES.

GUNSMITH — Write on your letter head for Goldenrod discount sheet.

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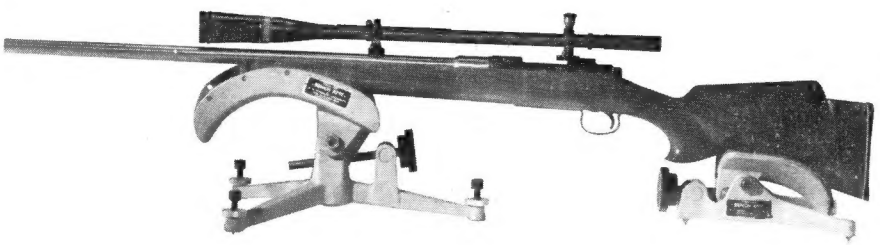

WOMACK TWIN-SET RIFLE BENCH REST STANDS

Relax and shoot minimum groups with Womack twin rests. Molded rubber cushions make sandbags unnecessary for average shooter. Advanced engineering provides fine adjustments and accuracy of aim. Inquire at your dealer or write direct. Front $32.50; Optional fore-end stop $1.50; Rear $22.50.

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LAMINATED BLANKS

. . . . for Precision Shooters!

(As formerly offered by Owens of Watkins Glen, N. Y.

Length: 34 and 36 inches
Depth at butt: 7 inches
Depth at fore-end: As shown below

2½"	Blank	7 ply	$15.00
3"	Blank	10 ply	20.00
3"	Blank	20 ply	35.00
3½"	Blank	12 ply	22.50
3½"	Blank	25 ply	40.00
4¼"	Blank	13 ply	25.00

Also!

Combination Laminated Blanks by Fajen

2½" Blank 1/16" Maple—1/28" Walnut $24.00

2¾" Blank 1/16" Maple—1/28" Walnut $27.50

AND Fajens "OLYMPIC"

Free Stock Style

. . . with side thumb rest and thumb hole. Write for prices.

Send $1.00 for Fajen's colorful new catalog of custom and regular style target and benchrest stocks; machine-shaped or completely finished and fitted.

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